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ORIGINAL ARTICLES.

SPECIFIC THERAPY OF TUBERCULOSIS AND VACCINATION AGAINST THE DISEASE.*

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I.

GENTLEMEN: Honored by your invitation I have accepted it with enthusiasm because it gives me much pleasure to speak in this great country of my studies in tuberculosis.

I come before you, a body of distinguished men, who have no fear of the new ideas that have broken the chain of old scholastic tradition in every field of human knowledge, and who bow down without reserve before the facts not caring whether or not they conform to prevailing doctrine. I shall speak to you with much confidence, because I am certain of receiving your approval.

The studies of which I am going to speak are both clinical and experimental.

I have lived for thirty-four years in public clinics and scientific laboratories, and for more than twenty years I have been the director of a great university clinic, in which tuberculosis always has been the object of my studies. I therefore have had the opportunity of acquiring a very large experience in tuberculous diseases; I have always held, however, that all clinical observation ought to be combined with assiduous laboratory research in order to illustrate and investigate the vast problems presented by tuberculosis. I accordingly established a special laboratory for the study of tuberculosis in my clinic, and afterwards founded an Institute for the study of the same. In this Institute, open to the students of every nation, a host of workers carry on experimental research under my direction. It would have been impossible without great means and a large number of able coworkers to have accomplished so much work. I might mention among these collaborators Lucatello, Marzagalli, Jemma, Mircoli, Sciallero, and Figari.

It is my conviction, moreover, that it is only by the association of clinical and laboratory work that it will be possible to solve the great problem of tuberculosis. Laboratory research alone does not accomplish the end, but it will never retard its development.

In my studies I have been inspired by two fundamental conceptions only, one relating to the cure of tuberculosis, the other to its prophylaxis. In regard to the cure, my desire has been to find out whether a specific defensive medium against tuberculous infection exists in the animal organism, or can be produced in it, and whether it is possible to utilize it for curative purposes. With reference to prophylaxis, the question was, whether or not it is possible to develop in the healthy animal organism, as is done in other infections, a special specific activity which will immunize the patient against tuberculous infection for a greater or less time.

All my researches on the question, both clinical and experimental, for more than fifteen years lead me to state: (1) *That it is possible to produce a specific therapy for tuberculosis;* (2) *that it is possible to immunize the animal organism against tuberculosis as is done in other infectious diseases, and that there is good reason to hope for an antituberculous vaccination for man.*

II.

I will now tell you at the start on what data and facts I have based my right to make these statements.

In order that I may be better understood, it is necessary for me first to set down a few fundamental ideas on the pathogenesis and pathology of tuberculosis, the result of a series of researches carried on by myself and my colleagues.

First of all I will say that the changes caused by tuberculous infection, in the tissue of an organism, and in the organism in general, are due to the poisons secreted by the bacilli when they are biologically active, and to the poisons contained in the bodies of the bacilli.

We have extracted those secretions of the bacilli known as the toxins by means of filtrations of the young cultures. We have found that they had a disturbing action upon the nervous system, especially upon that part governing the secretory mechanism and upon the nerve terminals as shown by profuse perspiration and great depression of temperature. Those contained in the bodies of the bacilli, known as proteins we have extracted with water in which they were more soluble than in any other menstruum. These have an inflammatory and destructive action on the tissues with which they come in contact, due to the necrotic acid of de Schweinitz and Dorset, and have therefore a disturbing action on the vasomotor innervation, on the trophic nerves and their terminal centers creating considerable elevation of temperature.

These poisons, extracted from the bodies of the bacilli, are the most pernicious. Injected beneath the skin they cause inflammation with purulent, fibrinous exudation, and bring about necrosis of the tissues; injected into the lungs they create foci of bronchopneumonia; when brought into con-

*A lecture delivered before the Henry Phipps Institute in Philadelphia, March 28, 1904.

tact with the meninges and peritoneum they set up inflammation. The bony tissues are also affected, presenting changes that remind one of rachitis.

In connection with these phenomena, many of which have already been seen and confirmed by other observers, it is very necessary to recognize the fact that the bacilli cause their pathogenic action in the animal organism by means of this double series of poisons, of which the proteins are the most powerful. The bacilli are of moment in that they produce these poisons and by multiplying also increase the poisons. The proteins favor their diffusion because by impoverishing the nutrition of the tissues they create a favorable soil for the productiveness of the bacilli. If one thigh of a guinea-pig be injected with bacilli and protein together, and the other thigh with bacilli alone, it will be seen that the infection travels much more rapidly on the side in which the bacilli are injected with the protein.

Another truth first proclaimed by us, and since confirmed by many other observers, is the fact that there are minor influences bearing upon the development of tuberculosis, the most noteworthy being that of the common pyogenic organisms, which favor the destruction of tissue invaded by tuberculosis and set up severe toxemic conditions.

From these new ideas light is shed upon the pathogenesis of tuberculosis. When the bacilli grow in a tissue they create there, by means of their poisons, a specific circumscribed inflammation, and form characteristic neoplasms, viz., tubercles. The nutritive changes then favor the growth of new bacilli, and thus new foci are formed progressively, and the changes in the tissue gradually become greater. If common pyogenic organisms chance to get into this tissue from the outer air (as may easily happen in the lungs) the destructive processes are aggravated and progress more rapidly.

From the bacterial foci the poisons pass into the general circulation, and set up phenomena of toxemia, which manifest fever, sweats and loss of weight. We have proof of this toxemia, because we have been able to demonstrate the presence of bacterial toxins in the urine and blood of persons having the disease.

After having gained a clear idea of the method by which tuberculous infection is developed we have turned our investigations to the discovery of the method by which the animal organism defends itself against it.

Our researches have shown that in the animal organism the elements of the tissues and the fluids possess a special defensive activity.

If we inject under the skin of such animals as the rabbit, dog, ass, horse or cow a small measured quantity of tubercle bacilli, and watch the daily changes in those bacilli, we see that little by little alterations take place in their vitality and that they are finally destroyed altogether.

If we inject directly into the lungs of a healthy animal the smallest measured quantity of tubercle bacilli we find that the bacilli undergo change and destruction without creating any lesion.

This defensive action of the tissues may not be in evidence when the number of bacilli injected is large; but it is manifest when they are few in number.

The serum of the blood of man and of other animals when in health also produces a decided effect upon tubercle bacilli.

We have studied methodically the culture of tubercle bacilli in the sera of different animals, deducing the inhibitive power of the serum by the facility with which the cultures develop in various degrees of dilution of the culture broth. It is evident that the higher the degree of dilution in which the serum exercises its action upon the development of the bacteria, the greater is its richness in antibacterial bodies.

The animals which we have studied are man, the horse, the cow, the calf, the dog, the hog, the rabbit and the guinea-pig in a condition of health.

The sera have been found to stand in this order of potency: the calf, the cow, the hog, man, the horse, the dog, the rabbit, the guinea pig. Those of the calf, the cow, the hog, man, the horse and the dog differ but slightly from one another in potency, while at a great distance from these stand those of the rabbit and guinea-pig, especially the latter, which has no action at all upon the development of the tubercle bacilli, for in its serum the bacillus develops just as well as in a common culture medium.

The serum of healthy animals, therefore, has in a definite but limited degree a defensive action against tuberculous poisons.

These defensive powers can be measured exactly by my method.

This method consists in determining by a series of graded experiments, what quantity of serum is necessary to save a guinea-pig from a mortal dose of *text-gift*. This test poison is a liquid which contains the product of tubercle bacilli macerated with heat in water, the dosage being fixed upon the basis that one cubic centimeter of the solution subcutaneously will kill a hectogram of a healthy guinea-pig.

By this method we have tested the blood of man, of the cow, the calf, the goat, the horse, the turkey-cock, the rabbit and the guinea-pig in good health.

The blood serum of the rabbit and of the guinea pig has no antitoxic power whatever, nor do the sera of other animals furnish a very great quantity. The richest in antitoxic materials is the serum of a healthy man. Then comes that of the turkey-cock, the calf, the cow, the goat and the horse.

The study of the power of agglutination carried on according to the method of Courmont-Arloing, on homogeneous cultures gives almost analogous results; none in the guinea-pig, almost none in the rabbit, sometimes an appreciable amount in other animals, especially in a strong, healthy man.

This triple power of the blood serum, bacteri-

cidal, antitoxic and agglutinating, increases considerably if a healthy animal is injected with tuberculous matter.

The bacillary poisons, the bodies of dead bacilli and living bacilli, introduced into the body of a healthy animal, produce in it antitoxins and antibodies and give it a special antitoxic, bactericidal and agglutinating property, while on the other hand they increase in it the destructive power of the tubercle bacilli in the tissue. With the methods of measuring and examining which I have invented, and of which I have already spoken, these facts may be proved exactly, and by the same methods which I have used any one who wishes to verify them for his own satisfaction may do so.

The production in healthy animals of agents of defense in the presence of tuberculous material was discovered before me by other observers in Europe, as well as in America, and among others by de Schweinitz and by Trudeau.

I took up the study of this question in 1890 in a methodical progressive manner, and I have been able to show with exactness the presence and amount of tuberculous antitoxins in the blood of animals that were under suitable treatment. I announced the fact in Bordeaux in 1895.

I use the word antitoxins in a broad sense, meaning by this name to designate all those defensive materials, taken together, which Büchner very appropriately called "Schutzkörper."

The existence of this antitoxin, at first denied, is to-day universally recognized, and constitutes as we shall see shortly the foundation for the specific therapy of tuberculosis.

The consecutive studies carried on in my school have led me step by step to prove the existence of antibodies and agglutinating substances and have enabled me to establish now, after many years' work, the doctrine of the defense of the animal organism against tuberculosis.

The healthy animal organism possesses a double series of defensive measures against tuberculosis, which may be called ordinary means of defense, and extraordinary. The ordinary means are naturally inherent in the tissues and secretions of the animal in a perfectly healthy condition, and are partly antitoxic and partly bactericidal. The extraordinary means are also antitoxic and bactericidal and develop principally in the presence of the tubercle bacilli that penetrate the tissues.

The cellular elements of the organism manufacture, as it were, substances which react against the invading bacteria and destroy and neutralize their poisons. If the organism produces defensive means in proportion to the number of invading bacteria it gains the victory. If, on the other hand, the defensive means are not sufficient, the bacteria gain ground and the organism succumbs. This happens when the bacteria growing on a tissue are very numerous, or, when not numerous, the organism is in a weak condition.

The proof of my statements may be found in the study of persons who have spontaneously recovered from tuberculosis as well as of those who have not recovered from it. In the former we find antitoxin and antibodies in large quantities in the blood; in the latter we do not find them, or only in small quantities.

Thus the vulnerability of an animal exposed to tuberculosis depends on the number of bacilli by which it is attacked and upon its reactive powers.

For this reason animals in a weakened condition are able to defend themselves if the number of invaders is small, and those that are more able to resist will succumb if the number of invading bacteria is large.

III.

These facts, gentlemen, brought up the question whether it would be possible to furnish those specific means of defense to the organism struggling against tuberculosis which are produced only a little at a time or in insufficient quantities.

Inasmuch as healthy animals inoculated with tuberculous matter produce the materials of defense found in their serum, it was but natural to seek to know whether the serum of these animals containing antitoxins and antibodies could be used as an aid to an organism struggling against tuberculosis.

From this was born, by a logical association of ideas, the suggestion of antituberculous serum therapy.

The serumtherapy which had been tried in America by de Schweintz, by Trudeau, by Stubbert and others was subjected by me to the severest scientific tests, such as are used for the serumtherapy of diphtheria and other infectious diseases.

But I would add, that it was done upon a much broader and larger basis, because in diphtheria the question was not studied as I have studied it analytically in tuberculosis, and because in diphtheria the natural defensive process of the organism was not demonstrated as I have demonstrated it against tuberculosis.

I will not trouble you with the details of the laborious course I pursued in this new phase of my studies. I will only give that which is necessary to explain my conclusions.

First of all I have established by a series of experiments what is the best method of obtaining in the healthy animal a serum rich in defensive materials which at the same time can be used in man without suspicion of danger. I have at the present time discarded the injections of living bacilli, and after numerous trials I have selected as most suitable for inoculation an aqueous extract of virulent bacilli, but dead, supplemented by the filtrate of a young culture. In this way I get the full value of the bacillary bodies and toxins.

The animals selected by me for the production of this serum were the horse, the cow, the ass, the calf, the goat, the sheep and the dog. I am convinced that the horse, the cow and the calf are to be preferred. The richness of the serum in

antitoxic materials was determined by us in the guinea-pig by means of the *text-gift*.

Our *text-gift* consists, as we have already said, of an aqueous extract of the bodies of the bacilli in an exact dosage; that is to say, so that one cubic centimeter of it would kill a healthy guinea-pig weighing a hundred grams. The potency of the serum is determined by the quantity required to save a healthy guinea-pig from a dose of the *text-gift* that has been established as deadly.

The standard of potency of the serum is established by the quantity which succeeds in saving a healthy guinea-pig of a certain weight from a deadly dose of *text-gift*.

The relative weight of the serum used to the weight of the animal saved, establishes the power of the serum. The antitoxic unit is established by a gram of serum capable of saving a gram of healthy guinea-pig. That is to say, a serum of which one gram will save a healthy guinea-pig weighing a hundred grams possesses one hundred antitoxic units, and it would need to possess one thousand units in order to be able to save a healthy guinea-pig weighing a kilogram, and so on.

The antibacterial materials, known as antibodies, have been studied by us in several ways. First we have added the serum in various amounts to a culture of tubercle bacilli, as we have already indicated, and thus have found how much it takes to prevent development. Next we have kept virulent bacilli immersed in the serum so that we might see whether they could still be cultivated, and were capable of giving tuberculosis to animals upon inoculation. Then we have injected virulent bacilli combined with the serum, and have seen to what degree they would render the guinea-pig and rabbit tuberculous.

The measure of the agglutinating power completes this research, and gives us the method of measuring the antibodies which are in the serum.

When the horse, the cow or the calf, under proper treatment, attains the power of giving a serum which has *at least* a thousand antitoxic units per cubic centimeter, and shows upon every test a bactericidal power, and which has reached an agglutinating power of at least one to three hundred, such serum may be used for therapeutic purposes, because it contains a sufficient quantity of antitoxin and antibodies.

When in Bordeaux in 1895 I said it was possible to obtain a serum rich in defensive antituberculous substances, chiefly antitoxin, everyone doubted it. To-day, all the laboratories, beginning with those of Behring and Koch, admit that it is possible to have a serum with specific antitoxic substances and specific antibodies.

The richness in antitoxic substances or in antibodies varies according to the method of treating the producing animal. If the animal is treated simply with toxins it is rich in antitoxin, and poor in antibodies. If it is treated with the bodies of dead bacilli, or an extract of the same, it is rich in antibodies, and poor in antitoxins. Recently we have succeeded in producing sera with an agglutinating power of 1-2,000 and even more, which have in addition a thousand antitoxic units to the cubic centimeter. I have tried to determine whether this serum would be innocuous to tuberculous animals and tuberculous men by injections into healthy animals and men. I am convinced that it is innocuous.

I have wished to see what would happen in the organism of healthy animals and healthy human beings into whom this serum has been injected. I have found by means of my method of grading the dose that with its use there has been a marked increase in the quantity of antituberculous substances which are found in the circulation.

Inasmuch as I found that according to this method of measuring the antitoxic and antibacterial powers of sera, there was an increase of defensive substances in the blood of the injected animals greater than the geometrical proportion I am obliged to conclude that the organism plays an active part in this tremendous increase. And inasmuch also upon the injection of the same serum in subjects that were very sick this increase did not take place, I am convinced that the participation of the organism is necessary to this increase.

I have wished, in short, to see what would happen in the organism of a tuberculous man in whom this serum was injected, and I have found the following: If there were no defensive substances in the blood before its use they appeared afterward. If, however, they had been there before, they were markedly increased afterward. I saw also that by means of its use toxic symptoms disappeared or were diminished. The progress of local inflammation was modified and caused to disappear.

In consequence of this action we observe in a general way diminution and disappearance of fever; diminution and disappearance of sweats; progressive improvement of the nutrition resulting in considerable increase in body weight.

And then, from a local point of view: The disappearance of the foci of bronchopneumonia, the production of foci of connective tissue, so as to form a sclerosis at those points which are involved by the disease; diminution and disappearance of the cough and expectoration; and finally, the disappearance of the bacilli, all of which are clinical signs of cure.

All these results *do not follow* in all cases of tuberculosis, but they do follow in nearly all cases of tuberculosis in the beginning of the disease. They do not follow when the general nutrition is profoundly impaired; they do not follow when there are centers of mixed infection with extensive destruction of tissue. They do not follow, in short, when tuberculosis has become phthisis.

I hold strongly to this differentiation between tuberculosis and phthisis, meaning by phthisis that morbid state in which the lungs by the combined action of tuberculous infection and pyogenic infections are the seat of destructive lesions, while the organism as a whole is profoundly affected

in its nutrition by the result of combined toxemiæ; namely, tuberculous toxemia, streptococcus toxemia, staphylococcus toxemia and even others.

When I announced these therapeutic results in Bordeaux in 1895 they were received with doubt. So deeply rooted in medicine is the conviction of the incurability of tuberculosis that any announcement of a new method of treatment awakens incredulity. But the use of antituberculous serum therapy has become spread abroad. In Italy as well as in other countries the serum prepared by my method has been used in large quantities. In these nine years there have been at least 20,000 cases of tuberculosis treated by my method. Naturally it is impossible for me to have data of all these cases. I have only been able to collect the notes of 2,899 cases. These were collected in a statistical communication by one of my most valued coworkers, Prof. Mircoli, to the Congress of Tuberculosis in Naples. These statistics show that out of more than 250 cases of circumscribed non-febrile tuberculosis 38 per cent. were cured and 49 per cent. were much improved; that out of 938 cases of circumscribed febrile tuberculosis, 18 per cent. were cured and 54 per cent. were improved; that out of 665 cases of diffuse tuberculous bronchopneumonia without microbic associations 14 per cent. were cured and 43 per cent. were improved.

Out of 332 cases of diffuse tuberculous bronchopneumonia with associated microbic infection 9 per cent. were cured and 36 per cent. improved. Of 712 cases with cavities and lesions 6 per cent. were cured and 40 per cent. were improved. Of all these patients 2,396 were in a febrile condition. The fever disappeared in 1,111 cases, that is, in 46 per cent.

As regards my personal experience, I can say that I have seen the most assuring results, and that the cures have persisted in those patients whom I have been able to follow. I have some that have survived seven and even nine years. I have seen the best results in ambulatory patients, but I also have had pretty good results in inmates of my clinic. In the hospital only those invalids come for treatment who are in a bad condition, and who are not at all in the same class as the ambulatory patients, for they are phthisical as well as tuberculous.

In this connection, it must not be forgotten that if the serumtherapy is to succeed there must be cooperation in the organism of the sick person, and if this organism is not in condition to keep up active cooperation, the treatment will be futile.

In your country, also, antituberculous serumtherapy has shown remarkable results from what I have been able to gather from a communication made by Prof. de Schweinitz, of Washington, to the International Congress of Tuberculosis in Berlin.

I believe that if one asked of serumtherapy only what could reasonably be demanded of the therapy of any disease, confidence in it would increase, with great benefit to mankind. I say this because physicians demand in tuberculosis what they would not dare to ask for in other diseases, or of those remedies which are best known and surest in their action.

No physician, for example, pretends that a heart with myocardiac degeneration ought always to maintain its functions; and he does not lose faith in the efficiency of digitalis, if the digitalis does not succeed in restoring activity to such a heart. No physician pretends that a liver violently affected, severely impaired in its nutrition by malaria, should return to its normal state by means of quinine, nor does he lose faith in quinine when he does not succeed.

The same may be said of mercury when the tissues are already destroyed, or deeply affected in their nutrition by the effect of syphilis. Would one, perchance, lose faith in corrosive sublimate if he should not cure by means of it a case of tabes dorsalis of syphilitic origin?

In tuberculosis, however, everything is expected always and in every case. And, furthermore, a remedy is wanted, not only to combat tuberculosis, but to build up an organism already destroyed by tuberculous infection. These are the unreasonable claims that will never be satisfied by any remedy, and which until now have prevented physicians from properly appreciating the various proposed treatments for tuberculosis.

While on this point, permit me to put you on your guard against another error which is, unfortunately, widespread. It is this: Don't judge a treatment for human tuberculosis by experiments in the cure of guinea-pigs which have been given an artificial tuberculosis.

It will be seen as our knowledge concerning tuberculosis and serumtherapy increases that this hypothesis has been wrong.

It is wrong, because the tubercle bacillus develops different properties in the various organic soils, and above all in various animals; wrong because the serumtherapy is effective only through the active cooperation of the organism to which it is applied. Not only this, but there is also a great difference in the manner in which infection takes place between the guinea-pig and man, because in man we do not find the system struggling with such an enormous quantity of virulent bacilli injected at one time, as we do when a guinea-pig is artificially injected.

The efficacy of antituberculous treatment, therefore, should be judged exclusively by clinical observations, and I can now assure you with full conviction that clinical observation is very favorable to serumtherapy, and at the same time that serumtherapy has a broad and sure scientific basis, because it has been proved that the serum contains antitoxin; that the serum contains antibodies; that the introduction of the serum into the organism produces new antitoxins and new antibodies.

For the rest, serumtherapy does nothing more than reproduce the process followed by nature in spontaneous cure, adding its good effects to those of hygiene, given to the organism in sanatoria, because serumtherapy, hygiene, and sana-

toria all have the power of endowing the organism with the necessary energy to struggle successfully against tuberculosis.

I am convinced that in a few years, when physicians will have learned all the benefits that serumtherapy can give in tuberculosis, it will be remembered with regret that so many lives might have been saved, and were not, because physicians with preconceived doctrines put it aside, and gave preference to remedies which were sanctioned neither by science nor by practice.

IV.

In the beginning of my treatise I said that it was possible to immunize the animal organism against tuberculosis, as is done in the case of other infectious diseases. These results of my studies and experiments I announced at Bordeaux in 1895. At that time my statement seemed like heresy. To-day, on every side it is affirmed that it is possible to immunize animals against tuberculosis, so as to render them able to withstand, as I put it nine years ago, injection into the veins of a virulent culture of human tubercle bacilli. The methods used by me and by various other experimenters differ; the result, however, is the same, *viz.*, resistance to tuberculous infection.

Permit me now to leave all that which pertains to the historical side of the question, in order to enter at once upon the practical and essential part of the argument.

The positive proof that immunization has taken place consists in showing that the animal has become able to withstand the endovenous injections of a virulent culture of tubercle bacilli. But this proof should be kept within proper limits. Those who believe that they have proof of having attained immunization which will permit of endovenous injections of colossal unlimited quantities of a culture of living, virulent bacilli, are in error, because when a quantity of powerful bacilli has been injected, the animals frequently die quickly from severe toxemia, due to the poisons of the injected bacilli; they also err even when this does not happen, because the defensive means of the organism are not in proportion to the number of invading bacteria, and the animal becomes tuberculous.

The school of Koch likewise holds this view, and it is necessary to conform to it to avoid exaggerations which have made observers of the truth withdraw from us and which still keeps them at a distance.

It is necessary to have an exact standard, and it should be borne in mind that normally infection never occurs in man in the manner above described and with such violence; it also should be borne in mind that we ought to study the problem in its clinical aspects, and from the point of view of its applicability to bedside treatment. We should be satisfied with a limit, and the limit is indicated by the quantitiy of bacilli that is sufficient to develop in control animals a slowly progressive tuberculosis. If in immune animals this quantity becomes innocuous we should feel that we have attained our object.

It is important, therefore, to recognize and study the modifications which take place in the organism of animals just rendered immune in in this way.

This is what happens. Their tissues acquire the power of rapidly destroying the tubercle bacilli that have been thrown into them.

Thus by injecting virulent bacilli, according to the method which we have already given, under the skin of rabbits and asses that have been rendered immune, we find that the bacilli are destroyed more rapidly than in the tissues of the control animals that had not been immunized.

The blood serum of these animals acquires a special bactericidal property toward the bacilli of tuberculosis; that is, one which hinders the development of the culture, causes necrobiosis of the tubercle bacilli and renders inert the tubercle bacilli that have been injected into them along with the control animals. The blood serum acquires special antitoxic properties toward the tuberculous poisons and protects guinea-pigs from a deadly dose of the same. It also acquires agglutinating power. All these changes are indications of attained immunization.

Koch, and his school, attach great importance to agglutination which they depend upon as the sign of the advent of immunization. I recognize its importance as it runs parallel to the development of the bactericidal properties of the serum. But I hold that the demonstration of the existence of this property is even more convincing.

Out of it all stands forth the fact that we have a direct method of showing attained immunization, and, thanks to the proof of the resistance of the animal to the bacilli injected into the veins, an indirect method of showing the value of the defensive substances produced in immunized animals.

In animals, immunization may be obtained with different procedures, and may be either active or passive as is the case in any other infection.

The method most commonly followed for the production of active immunization against tuberculosis in animals is that of progressive injections of bacteria of variously attenuated virulence. This method has given good results and has been as successful in my school as in that of Behring and of Koch. It is, however, a method that is difficult to carry out because one does not always hit the exact dosage, and then the animal is lost or immunization does not take place. And for this reason it has not succeeded and does not succeed in the hands of many observers.

A more certain method of active immunization is that of inoculation with dead bodies of the bacilli properly prepared, sometimes used whole, and sometimes macerated in warm water. With this procedure good results have been obtained, and long experience has shown that the injection

of very little material is required for the production of a large amount of defensive material in the animal organism.

Another method of active immunization which has been recently used by us, and which has given the best results, is that based upon the use of what we call bacillary pulp. This bacillary pulp consists of the juice of very virulent bacilli which we obtain by expression and subsequent passage through the Chamberland filter.

We thus have a juice which in all the tests made is shown to be absolutely free from bacilli, a juice of bacilli which has been in no way changed by chemical agents or by heat. This juice produces satisfactory immunization, causes the formation of defensive substances in large quantities, especially of antibodies, and can be easily standardized. It has all the characteristics of living bacteria without any of the disadvantages. And considering the fact that the bacilli act only through their toxins it is easy to see how it can be reasonably substituted for the bacilli. But, setting aside all doctrinal considerations the fact stands out that immunization by this means progresses rapidly and with safety. By this method we have also been able to immunize guinea-pigs and rabbits, and have obtained in guinea-pigs sera with an agglutinating power of from 1 to 1000, and in rabbits from 1 to 2000.

Passive immunization may be obtained for tuberculosis as it is for other infections, by introducing into the animals under experiment, defensive substances, antibodies, and antitoxins, obtained by proper treatment from another animal.

In reality this immunization is not wholly passive. It arises, without doubt, in the animal organism through the energies of the organism itself; this is proven by the fact, as I have shown, and as may be found by any one who proceeds according to my method, that the antibodies and antitoxins exist in the blood of animals thus injected in much larger quantities than was injected. Guinea-pigs and rabbits thus treated attain the power of withstanding endovenous injections of a quantity of virulent culture that surely would kill the control animals in four or five weeks.

Introduction of these materials is made by injection of the serum containing them subcutaneously and intravenously and may be accomplished through the digestive tract. This latter is a part of our more recent studies which deserves further investigation, on account of the importance that it may have in human practice, and on account of the immediate possibility of its application to man.

The passage into the blood of materials for defense against bacterial infection, by way of the digestive tract, has been hardly studied at all until now, and it opens up an entirely new and almost unexplored field of research. The most conclusive studies are all Italian. There are those of Prof. Sclavo, who has demonstrated the possibility of introducing diphtheritic antitoxins by the digestive tract and of developing their immunizing action in animals, and those of my school in respect to the absorption by the digestive tract of antitoxin and tuberculous antibodies.

I shall set aside all doctrinal questions to which this might refer, convinced, as you will be, that the facts are worth more than all the discussions, and I will tell you what I have seen.

The first idea of resorting to the digestive tract for the introduction of antitoxins and tubercular antibodies came to me when confronted with some patients who opposed the injection of serum.

The results impressed me because I saw antituberculous substances increase in their blood at the same time that I observed develop in them analogous effects to those which I had seen with serum injections.

Struck by this fact, which I made public in 1898, researches in connection with it were undertaken in my laboratory. A first series of examinations showed that not only the serum of the blood but above all the blood clot, that is, the conglomeration of red and white blood corpuscles, contained the immunizing substances in large quantities. The next step was as follows: there was drawn from the jugular veins of an immunized animal (horse, cow) a certain amount of blood. Part of this was allowed to coagulate in a sterile vessel, in order to gather the separated serum. Another part was rapidly defibrinated, and the serum was collected in a few minutes by centrifugalization. The sediment was then repeatedly washed with a physiological salt solution, and an extract prepared using an amount of distilled water, equal to the serum extract. After forty-eight hours the agglutinating power of the three preparations was estimated in comparison with homogeneous cultures of tubercle bacilli (method of Courmont and Arloing), and the antitoxic power in comparison with the *text-gift*.

If the antitoxin and the agglutinating power were free in the circulating plasma, the agglutinating and antitoxic power of the serum of centrifugalization ought to be equal to that of the separated serum, and there ought to be little or no agglutinating and antitoxic power in the aqueous extract of the corpuscles.

However, in all the trials of centrifugalization, the serum which had stood the least time outside of the organism in contact with the cellular part of the blood was shown to possess a markedly inferior agglutinating power to that of the separated serum (the serum remained for a long time, forty-eight hours in contact with the cellular part of the blood) obtained by the coagulation of the blood of the same animal.

The aqueous extract of the corpuscles always has had an agglutinating power distinctly superior to that of the serum of centrifugalization in the same animal; and equal, and sometimes superior to the agglutinating power of the separated serum of the same animal.

To sum up, so far as the agglutinin is concerned, the lower the power in the serum of centrifugalization, the higher is it in the extract of the corpuscles; and while there is a marked difference between agglutinin contents of the serum

of centrifugalization and the separated serum, there is little difference between the separated serum and the extract of the coagula, although this latter has been shown to be always perceptibly richer.

So far as antitoxic value is concerned the extract of the coagula and the separated serum always show themselves endowed with a high value, equal to 1,000 antitoxic units; that is to say, capable of saving as much the one as the other when injected under the skin in the proportion of one to one thousand of weight, the healthy guinea-pig having been given a mortal dose of tuberculin, while, on the other hand, for the centrifugalized serum it was necessary to save a healthy guinea-pig from the same mortal dose of *text-gift* to inject in one instance in the proportion of two thousand, and in three other cases in the proportion of one to five thousand, that is to say, showing it possessed from 500 to 200 U. A.

The results obtained lead us to believe that the tuberculous antitoxins and agglutinins although found circulating freely in the plasma, are only found in very small quantities, and that therefore they must hold a more or less intimate relationship to the figured elements of the blood. And as it appears that the faculty of producing these substances cannot be attributed to the red corpuscles of the blood; on account of their specific physiological function we must hold that it belongs to the leucocytes of the blood.

In pursuit of this knowledge we have methodically fed guinea-pigs, rabbits, dogs and asses with this substance. To a series of guinea-pigs we gave daily by the digestive tract three grams of this tuberculous antitoxin for about one hundred days. Before the experiment, having bled from the carotid, we measured the agglutinating power and found it wholly negative; after fifty days of treatment the sera of these guinea-pigs had agglutinating powers that ranged from a minimum of 1 :15 to a maximum of 1 :30. After one hundred days of treatment the sera of these guinea-pigs presented an agglutinating power of 1 :25, 1 :40, and finally, 1 :50. These guinea-pigs were divided into two series. In the first series we injected into the veins living virulent bacilli in the proportion of 2 milligrams to each animal. In the other series we injected a deadly dose of test poison.

Of the guinea-pigs injected with living bacilli in the veins, some lived sixty, some ninety days, while an equal number of control guinea-pigs of the same weight injected in the veins with the same dose of the same bacilli all died within twenty-five days with marked emaciation. At the autopsy of the former there was found circumscribed pulmonary tuberculosis, and tuberculosis of the lymphatic glands, while in the controls there was most acute diffuse tuberculosis. In the second series with subcutaneous injection of test poison in the dose of 1 :100, all triumphed victoriously over the poison; while an equal number of control guinea-pigs injected with the same quantity of the same tuberculin all died in from three to five days.

To a series of rabbits there were fed daily four grams of antitoxin; all these rabbits before the experiment showed neither antitoxic nor agglutinating powers in their sera. They were subjected to this treatment for about sixty days. At the end of that time the agglutinating power of their sera was from 1 :50, and in some from 1 :60. the antitoxic power was equal to 330 antotoxic units; this serum injected in a dose of 5 :100 subcutaneously in a healthy guinea-pig saved it from a deadly dose of test poison. The rabbits thus immunized, together with the same number of control rabbits, each received in the marginal vein of the ear five centigrams of living and virulent tubercle bacilli.

The controls all died in eighteen to twenty-five days with marked emaciation (some had lost more than a third of their weight) and the autopsy showed diffuse miliary tuberculosis in the liver and lungs.

The rabbits previously subjected to the treatment with antitoxin by way of the stomach, easily overcame the injection of living bacilli. At first they lost weight and then they gained, and when they were killed about three months later they were in a general condition of robust health, and at the autopsy there was no sign of tuberculosis.

Also in a series of dogs immunization was practised against tuberculosis, by way of the stomach. To these dogs were given daily mixed with their food five grams each of antitoxin. The dogs thus treated developed in their sera conspicuous agglutinating and antitoxic properties. Before the commencement of the treatment each dog was tested for the agglutinating and antitoxic power of its serum by bleeding from the carotid. In not one, notwithstanding repeated experiments, was any antitoxic property found in the sera, at least in any degree that was appreciable by the methods employed. Besides it may be said that the agglutinating power of the serum of the majority of dogs has been found negative; although some have shown a very small agglutinating power equal to 1 :5 and the highest to 1 :10.

The duration of treatment was about three months; after two months, on bleeding these dogs and measuring with the Courmont-Arloing method the serum was found to have agglutinating powers, ranging from 1 :50 to 1 :100 and antitoxic value equal to 200 antitoxic units.

At the end of this treatment, that is, after the dogs had taken antitoxin by the stomach for three months, the agglutinating and antitoxic power of their serum was again tested, and it was found that it had been much augmented, amounting in all the dogs to a value of 1 : 200 and even more.

The increase of agglutinating power was accompanied step by step by antitoxic power. The sera of all these dogs had attained so high an antitoxic value that injection of a dose of two per cent. under the skin of healthy guinea-pigs saved them from test poison; these sera had obtained an antitoxic value equal to 500 units.

It was likewise found with the dogs that their organisms presented resistance to bacillary infection, after their sera, as in the rabbits and guinea-pigs, had shown the presence of a conspicuous amount of antitoxic and agglutinating substances.

In these dogs, and in the others under control, all of about the same weight, there was injected into the vein of the foot 30 centigrams of living virulent bacilli in an emulsion of physiological serum.

Some days after the injections all the dogs began to show emaciation, quite marked in those that were not immune, but less notable in those that were immune, and these latter, after a period of about twenty days of general ill-health, recovered completely and all gained weight perceptibly. At the point of injection there was no reaction whatever, and after fifteen days one could not, upon inspection, see the point on the vein in which the needle was introduced.

But quite different, on the other hand, were the fortunes of the control dogs; at first inflammatory processes were noted, and then ulcerations at the point of injection, with necrosis and conspicuous loss of tissue; these ulcers continually presented a superficial torpid granulating surface which never healed, notwithstanding proper local applications.

In the dogs of this series (the controls) the emaciation, marked from the beginning, continued progressively and in a state of marasmus reached during a period of from 40 to 60 days a marked loss according to the body weight; in some the loss amounting to almost half the original body weight.

At the autopsy there were found active tuberculous processes at the point of injection, tuberculosis of the neighboring ganglia, of the mesentery, liver, spleen, and to a slight degree of the lungs. None of the immunized dogs, which gradually, one by one, were killed after a period of from two to four months, showed any signs of tuberculosis.

In the asses to which were fed daily twenty-five grams of antitoxin by the stomach a considerable increase of agglutinating and antitoxic power of their sera ensued. In them it was observed that ingestion of this substance produced decided well-being and a noticeable increase in weight. Their sera, examined at intervals, presented a conspicuous development of agglutinating and antitoxic substances. Before beginning the treatment each was accurately tested, for antitoxic and agglutinating power of their serum, by the methods indicated, and in no case was agglutinin and specific antitoxin found to be present.

In the first experiment made, about fifty days after the beginning of the treatment, we found agglutinating powers in the serum, ranging from a minimum of 1:50 to a maximum of 1:150, and antitoxic powers varying from 100 to 200 antitoxic units. After four months all the asses were bled again, and we found in their sera decided presence of agglutinating and antitoxic substances. They possessed agglutinating powers which amounted to about 1:200, and antitoxic powers equal to 500 antitoxic units.

The experiments here related are therefore positive proof that defensive antituberculous materials are absorbed by the digestive tract, and that they confer upon the animals to which they have been fed a resistance against tuberculosis. And they are absorbed independently of the age of the animals.

In like manner the milk of cows which have been immunized against tuberculosis contains defensive materials, and when administered by way of the digestive tract, confers upon the animals nourished by it immunizing properties.

The question of the passage of immunizing materials against infection in general into the milk is one that has come to be much discussed of late, more on the score of reasonableness than as a positive fact. Here, as in the beginning, setting aside all doctrinal debates, I will only say that so far as antituberculous defensive materials are concerned, they positively do pass into the milk, and I make the statement as the result of our investigations.

We have in fact immunized two milch cows with the juice of dead macerated bacilli, according to the methods we have habitually followed, studying during the time their milk, both as to its agglutinating power on a homogeneous culture of tuberculosis and its antitoxic power over *test-gift*.

Step by step, as we proceeded in the immunization we saw appear in the serum of their milk, when properly prepared, agglutinating powers which developed progressively, increasing in a parallel line with that of the serum of the blood, and maintaining approximately a relation of 1 to 5; that is, the agglutinating value of the serum of the milk was a fifth less than the agglutinating value of the serum of the blood.

We likewise have been able to establish the presence of agglutinin in the milk of the immune female rabbit, and relatively to that in the blood, in a measure in even greater quantity than in the milk of the cow.

It is certain that the antitoxins pass into the milk, and agglutinin in greater proportions than the rest. The proportion between the antitoxin contained in the milk and that contained in the blood we have found to be as 5 to 10.

All of these proofs were made according to the methods we have already spoken of, and there is no doubt whatever concerning this fact, namely, that the antibodies and bacillary antitoxins contained in the blood of immunized females pass into their milk.

If, then, we feed sterile animals with this milk, we find, as we would expect after the experiments we have just described, that the defensive material becomes absorbed in the digestive tract and passes into the circulation.

We have fed eight-day-old calves for four months with milk from an immunized cow, the serum of whose milk had an agglutinating power of 1 to 40, and an antitoxic power of 1 to 700.

The blood of these calves before they were fed on the milk had neither antitoxic nor agglutinating powers. However, the serum of the blood of these calves after having used for four months the milk of immunized cows, acquired an agglutinating power of 1 to 70 and an antitoxic power equivalent to 1,000 antitoxic units to the cubic centimeter.

Behring in a conference held a year ago in Vienna, inquired whether antituberculous materials pass into the milk, and whether they can be absorbed by the digestive tract.

Our first answer to this question was given even before he had asked it, because our communication was made in 1902 to the Congress of International Medicine in Rome. These later studies which I now report, give the answer in full.

Further research will better define the qualifications of the fact, but the fact itself stands, and has an importance from which there is no escape.

It therefore enables me to affirm that immunizing materials can also be introduced into the animal organism by means of the gastro-enteric canal, and be utilized for passive immunization.

As we have seen, the ways in which immunization can be attained are numerous, no special bacilli nor obscure processes being necessary as there would appear to be on reading what Behring has said in his address. It is only necessary to employ good products and to acquire that experience which comes to those who work constantly at a given subject.

In view of the now indisputable fact of the possibility of immunizing animals against tuberculosis it is natural to ask why can we not obtain the same results in man, and create thus in his body a certain resistance to tuberculous infection. It is this problem that engrosses me at the present time, and has absorbed all my energies.

I have examined every possible means of immunization adopted for animals. I have discarded active immunization by means of endovenous injections of attenuated living bacilli. This is a procedure which we will never be able to adopt in practice. Though it is true that Möller, the director of the sanitarium at Belzig, near Berlin, has tried endovenous injections of the bacilli of tuberculosis which had been attenuated in the body of the crocodile, and has had no bad results from them, nevertheless, in spite of his example, I repeat, this method of immunization will never enter into human practise. I could never advise it. Inasmuch as my studies have clearly shown that the action of the bacilli depends upon the toxic substances contained in their protoplasm, and in the toxins secreted by them; and since it is possible to produce antitoxin and antibodies by means of injections of these materials only, I neither see nor comprehend the necessity of injecting living cultures, no matter how much attenuated. We must not forget that the resistance of the tissues to tubercle bacilli varies with each person, and what might happen in such a case might be, as has been seen in animals by many experimenters, the production of a tuberculosis as the result of an injection of active bacilli, intended for immunization.

Passive immunization by introducing into the human body immunizing substances prepared in the body of healthy animals by the methods which I have already indicated, is the method which certainly seems, the most easily attained for man.

By injections of sera rich in antitoxin it is possible to confer upon the human body a very high degree of immunization, both through the substances introduced and through those which the substances introduced provoke the production of in the human body itself.

If we measure the antitoxic, antibacterial and agglutinating powers of the blood serum of a man after a period of injections into his blood serum from an immunized animal, we find that we have raised the standard very high. The antitoxic power may reach and even surpass 1,000 antitoxic units per cubic centimeter, while the agglutinating power reaches the figure of 80 to 100.

These facts prove that immunization has taken place, and show that the same thing happens in man as in animals when treated in the same manner, the latter thus becoming refractory to the endovenous injections of virulent tubercle bacilli which kill control animals.

In man, we have never made this test and will never make it. The analogy to what happens in animals is, however, a sufficient proof of it.

In addition, we have a proof in men suffering with tuberculosis, and who have been healed by injections of therapeutic serum, that is quite analogous.

In these subjects, who in consequence of such injections given have been permanently cured, the serum by developing a therapeutic action has evidently also caused immunization, because without this they would have had a reinfection in an organic soil which had lost its defensive powers or the capacity to produce one. And, this is a fact to which until now sufficient attention has not been given, and which therefore deserves to be considered.

In view of the wide diffusion of tubercle bacilli it must be held that if a subject cured of tuberculosis does not become reinfected, it signifies that his organic soil has become modified in such a way as to be able to withstand a new infection. If this were not true, he would again become infected.

Now, of these subjects who have been injected there are many who have been permanently cured for ten years, and a number of them are from time to time under observation in my clinic. In this connection it would be interesting to tell the story of a tuberculous family observed in my polyclinical service. In this family the mother had had a brother and two sisters who had died of tuberculosis. She, however, was well. The father was born of healthy parents. From this marriage 12 children were born. One died of diphtheria at

three years of age, the other 11 were all tuberculous. Of these, four had already died before the family came under my observation. The other seven all came to my polyclinic, and all showed pulmonary tuberculosis in different stages. They were immediately subjected to passive immunization with progressive injections of antitoxin; to-day they are all in excellent condition, showing nothing wrong in the respiratory tract. The immunization has lasted for three years, during which time the patients have worked and lived in miserable hygienic conditions. They went to work and were exposed to all sorts of weather. This is a significant illustration, on account of the number of the individuals and the family to which they belong.

Indeed analogous results may be obtained in man by the introduction of defensive materials by way of the digestive tract, with serum, with blood coagula, with milk, and most probably with the flesh of immunized animals.

In the test subjects to which we have administered antitoxin and antibodies by the mouth, we have seen the agglutinating power mount from zero to fifty, and the antitoxic unit from an insignificant fraction per cubic centimeter to 200.

This shows that also in man agglutinin and antitoxin administered by way of the stomach pass into the circulation and stimulate the formation of other agglutinins. The same thing happens, therefore, in man that happens in animals which, as we have already seen under the same treatment, become refractory to endovenous injections of virulent bacilli.

Behring, in the past year, after having finally discovered what I had discovered nine years before, namely, the presence of antitoxin and antibodies in the blood of immunized animals, expressed the hope that such substances might possibly be used in milk for human prophylaxis. He expressed simply a hope because, as he announced, he then had not had any actual experience in the matter. This hope, as a result of our studies that have already been published, had been realized before he had even expressed it. Our investigations show that it is quite possible to get a certain degree of immunization by means of the digestive tract in adults; this point is emphasized because Behring held that it might be hoped for only in infants.

Another method of possible immunization in man which I have studied and which is also efficacious, is a method of mixed immunization, first passive, then active, which we call progressive immunization.

The following is the method by which I proceed: I give first of all a series of injections of a cubic centimeter of serum rich in antitoxin and antibodies for a period of twenty days on alternate days. Then, during the second period, I inject the same serum added to an extract of macerated tubercle bacilli in a progressively increasing quantity. I begin by making five injections with serum that contains a milligram of extract to the cubic centimeter, and thereafter consecutively five injections with two milligrams, five with three milligrams, five with four milligrams and five with five milligrams, always using one to each cubic centimeter.

Following this comes a third period in which I inject the extract of bacilli in aqueous solution by itself and in a progressively increasing dose; that is, five injections to a milligram per cubic centimeter, five to two, five to three, five to four, five to five.

In this manner, after a period varying from three to four months, there develops in the blood of man a considerable quantity of antitoxins, bactericidal materials and agglutinating materials. Men in whom there had been an agglutinating power of from one to five reached the point of having an agglutinating power of from 1 to 100, which to any one who has had experience in such studies, is a rather high power of agglutination. Naturally, in these men I did not make any injection of living bacilli to see by direct test whether immunization had actually taken place, but I can only say that animals treated in the same manner and with the same strength proved resistant to injections of a culture of living bacilli. The animals also had antitoxic, bactericidal and agglutinating materials in the blood.

I have lately studied a method for man that is very promising and easy of attainment. I was led to this by what I had observed in my studies of the efficacy of the dead bodies of the bacilli in the production of immunity; and I took as a keynote this fundamental principle: *Create a peripheral focus of tuberculous inflammation without living tubercle bacilli and bring about by this means the active production of defensive materials. In this way a true vaccination may be practised.*

I have adopted such a method in man, after having controlled it in animals. In the animals treated in this manner, I had the usual results; that is, resistance to the culture of living bacilli, the production of defensive materials, and a high agglutinating power. In man I have observed analogous results, with the exception of the resistance to living bacilli which I have not proven. I will tell you in detail what happens. The part used for the injection is the same as in Jennerian vaccination, the arm. A superficial subcutaneous injection, but exceedingly superficial, is made in the arm with a small quantity of vaccine material. A fever develops. Let me illustrate by some cases: Two children habitually feverish have had these injections. One of them on the day following the injection had an elevation of temperature which reached 100.7° F., with a corresponding acceleration of the pulse. The day after there was again a slight elevation. The fourth day after, the temperature again went up, then the thermic curve ended in a complete fall. No other phenomena of general disturbance occurred outside of that of a slight feverishness. In the other child, on the day following the injections the fever reached 101.9° F. and

lasted two days and then fell. The course of the pulse also followed the thermic curve. The same thing happened in several other infants which I injected in this way. There is a local formation of a small abscess which is limited and completely sterile. There results a small purulent focus which if the injection is even slightly deep requires some time to heal. We have had some that lasted three or four months before they were completely healed. In the meantime there is a progressive increase of agglutinating power. For example, a child that had an injection on March 1, 1903, with an agglutinating power of from 1 to 10, had already reached on April 10 an agglutinating power of 1 to 20, June 15 of 1 to 25, July 20 of 1 to 60, and October 15 of 1 to 100. The most important feature of this is the progressive increase, because it shows that defensive substances are being continuously elaborated. The interpretation placed upon it may or may not be true, but the fact is that the increase of agglutinating power is progressive, and has been so in the whole series of subjects that I have injected. I cannot ascertain whether or not these children are now capable of resisting an injection of virulent tubercle bacilli, because I have not wished to make such a test upon them, but I have the most important criterion of analogy. The animals thus treated and which have presented the same phenomena, the increase of agglutinating and antitoxic power and bactericidal power, were able to withstand endovenous injections of a virulent tuberculous culture. In addition the human clinic furnishes us data which confirm these experimental facts.

We often see that when a focus of tuberculosis is completely healed in man he remains permanently immune against tuberculosis. There are cases of surgical tuberculosis which quite clearly establish this fact, since, as a rule, when they are cured, tuberculous foci do not again show themselves elsewhere. And in families in which tuberculosis is prevalent we see that the only ones that survive the other members are those who have articular tuberculosis and have been cured of it. In subjects that have had cutaneous tuberculosis the same thing usually occurs. There have also been similar examples in visceral tuberculosis.

There are many cases of peritoneal, pleural and pulmonary tuberculosis cured in patients who have never afterward had any tuberculous foci in any part.

When an individual is completely and surely cured of a focus of pulmonary tuberculosis and sclerosis of the area previously affected has taken place, we see that he remains habitually and permanently immune. I say completely and surely cured because there is no need to confound with cure that improvement of the general condition that is due to the neutralization of the tuberculous toxins while locally the lesions persist and continue.

These cases are so many more examples of what the casuistic clinic furnishes us in subjects immunized against tuberculosis by having had an attack of curable tuberculosis, and having been cured of it.

I say immune, as I have already observed, because the organic soil in which tuberculosis has once struck root would, if not modified, retain susceptibility to a subsequent implantation.

All these researches and all these facts prove positively that it is possible in several ways to produce specific immunizing substances in a healthy man, which increasing naturally augment very decidedly the resistance of the body to tuberculosis.

Will this increase of resistance be sufficient? How long will it last?

I cannot answer this question yet; it is necessary now to carry on researches in that direction. And since the system of vaccination that I have devised is innocuous its application on a large scale would furnish many useful data. By practising this vaccination in families where tuberculosis is prevalent, practising it on a large scale in factories and in industrial centers in which tuberculosis makes havoc, we might perhaps be able to see very soon what value it may have.

My colleagues, I believe that I can foresee this. There are already some possibilities of carrying on these studies on a large scale.

Since milk, the blood serum, the blood and probably also the flesh of immune animals can furnish the human organism with elements of resistance against tuberculosis, why should not these be used as food and furnish along with the normal nutritive material immunizing material?

Why, instead of ordinary milk, should we not use the milk of an immune cow? Why, instead of ordinary meat, should we not eat the flesh of immune animals? On these points scientific investigations are already sufficiently advanced to be of benefit to humanity.

The struggle against tuberculosis, it must be remembered, cannot be efficacious unless it succeeds in curing the organism of it. All the means thought of to destroy the bacilli have fallen short of anything decisive, just as sanitary restrictions have failed in the case of other infections.

The victims of tuberculosis will diminish in number in proportion as the human organism is in condition to resist the disease. In this proposition lies the whole secret of success.

Here in your great country, in which there is so much initiative, here ought to be born a great movement for the practical application to normal daily life of all the scientific truths which we now possess for training the organism to struggle against tuberculosis.

And if this treatise of mine brings forth this as a result, the awakening in America of a great movement of this kind, it certainly will accomplish its highest purpose. And if this movement should originate in your noble institution, your institution will have reached the highest goal to which it can aspire, the goal of redeeming humanity from tuberculosis. I leave you with the faith and hope that this may come to pass.

THE TREATMENT OF NEURASTHENIA.*

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There is one fundamental principle which furnishes the reason for every step in the treatment of a neurasthenic patient. The nervous system is a mechanism, and, like the simplest machine it receives a limited amount of energy and expends it. Under normal conditions the amount of energy received has slightly exceeded the amount expended, so that a certain reserve has been accumulated, more or less of which will be used during periods of unusual activity, to be promptly restored during rest. An exhausted nervous system has been so excessively active that food and oxygen have not been able to restore the depleted reserve, and so, whenever a vigorous and sustained action is called for, the machine works badly. It is like a storage battery that has been discharged too rapidly or for too long a time. Accordingly, whatever tends either to check the loss of nervous energy or to increase its income, providing it is not incidentally harmful, is a remedy for neurasthenia.

But, although this principle is clear and simple, its application is generally difficult and intricate. Increase in food and oxygen is indicated, but the increase may not be utilized. An overexhausted storage battery is so impaired that it cannot at once receive a full charge of electricity, and an exhausted nervous system may fail both to control digestion and to assimilate what is digested and brought to it. Rest is plainly indicated but the most stringent abstention from work will be of little or no avail if the more exhausting process of fear or worry is allowed to go on. Accordingly, we have no specific for neurasthenia; there is no magic drug or food, no form of electricity or radial activity, no plan of rest and isolation, no system of mental therapeutics on which we may exclusively rely.

When a difficult thing is to be done there is generally a special combination of resources that will succeed, although each taken singly is futile. To open the door of a safe you must have the right figures rightly arranged, and to get more than an occasional success in treating neurasthenia we must have a combination of favorable influences especially adapted to each individual patient.

Theoretically, the combination should be determined by the condition and individual peculiarities of the patient alone, but the physician is also a person, with his own peculiar resources and limitations, and the treatment must to a great extent be determined by his characteristics. For example, the physician who is buoyant and optimistic will depend largely on the favorable mental influence he exerts while the one whose chief characteristic is scientific accuracy will depend on the physical side of treatment and only secondarily exert a favorable mental influence. Just as no two artists can portray the same person in the same way, so no two physicians can treat the same case of neurasthenia in the same way.

In accord with the fundamental principle we should attempt to divide all remedies into those which, like rest, diminish the expenditure of nervous energy and those which, like food, increases its income. This can be done only roughly, for some remedies are helpful in both ways and others, like electricity, are known to be useful but in ways that are indirect and obscure. Making these allowances, our resources may be tabulated as follows:

I. Remedies whose chief effect is to prevent the loss of nervous energy. (A) Prevention of emotional disturbances; (1) By reassurance and favorable suggestion; (2) By forming the habit of muscular relaxation and repose. (B) Limitation of work. (C) Prevention of toxic conditions. (D) Removal of peripheral irritations. (E) Reduction of cortical irritability by medicines. (F) Sleep.

II. Remedies whose chief effect is to increase the income of nervous energy. (A) Food. (B) Medicines.

III. Remedies used empirically whose action is complex or obscure: Electricity, massage, hydrotherapy, exercise, change of climate.

Emotional Disturbances.—In most cases of neurasthenia the most persistent source of exhaustion is disordered emotion. Beside the ordinary griefs, anxieties, vexations and fears, the neurasthenic has a great many which a normal person cannot understand. There is a long list of diseases, ranging from varicocele to insanity, one or more of which he may imagine to be fastening itself upon him. Experience of the most ordinary kind, such as purchasing a ticket, getting on a car, walking in the street, talking to an acquaintance, and so on, may cause paroxysms of fear. An accidental association of ideas, as when the sight of a knife suggests the idea of stabbing a child, may by the very terror it arouses fix itself firmly in the mind and cause a pitiable fear that it may pass over into action. The inevitable annoyances of life have an exaggerated effect upon the neurasthenic and he reacts excessively to many trifling irritations which a normal person would scarcely notice; under their influence there is a tendency to assume a strained attitude in which the breathing is rapid and irregular and the muscles generally are tense. This condition is an exhausting one; patients often say that they do their best to hold their nervousness in but finally go to pieces. In these and many other ways disordered emotions involve a profound physical effect, draining the patient's strength and preventing its restoration.

The treatment of these disturbances begins with the examination and prognosis. Skilful questions and the careful physical examination convince the patient that his mysterious disease is now understood and the assurance that the case is one of nervous fatigue, that there is no organic disease, no sexual disorder, no danger of insanity, etc., and that the annoying symptoms will no doubt

* Read before the Colorado State Medical Society.

disappear under proper treatment at once places him upon a higher emotional plane. Fear and despondency thus banished will return but repetition of the reassurance will again succeed and for a longer time.

But, although it is of great importance to remove the ideas which might rationally cause a depressing emotion, this is not always sufficient, for such emotions often persist without any rational cause. The neurasthenic knows very well that an inappropriate question ought not to irritate him, yet it may set off an explosion of anger; he knows there is nothing to fear, yet feels horribly afraid. A very valuable resource in controlling a depressing emotion consists in the voluntary suppression of its motor reaction and the imitation of the attitudes and actions which express the opposite emotion. Thus the school-boy about to declaim, who would like to sink through the stage, steadies his trembling limbs, holds himself erect and forces loud tones from his quavering larynx; and in doing so he does not merely conceal his fear, he to a great extent dispels it by displacing the sensations of fear with the sensations of courage. Every neurasthenic should be taught to treat his fears, rational and irrational, in the same way. Too much should not be expected of this artificial courage at first, but if judiciously cultivated it will rapidly develop power for good. On the same principle, the neurasthenic should be taught to avoid the motor reaction to small annoyances and anxieties by breathing easily and slowly, by relaxing all his muscles except those whose activity is really needed, by speaking calmly, in short, by assuming the attitude and expression of complete serenity and repose.

Rest.—The prohibition of work is an obvious remedy for neurasthenia, sometimes too obvious, for it has great disadvantages and is often used to no purpose. The physician must carefully consider the relative importance of work and worry, and to what extent one is dependent on the other. It is very easy to tell a patient that he must drop everything and get away, but this is often a shirking of responsibility. In many cases it is far wiser to keep the patient doing a reasonable amount of work, enabling him to do it by removing as far as possible all other causes of exhaustion.

There are many other cases, however, especially those in which work has been a large factor in causing exhaustion or is inseparable from worry, that require the patient to give up work completely for a time, and unless he is to stay in bed the rest must be combined with agreeable recreation. It goes without saying that short hours for work and many vacations are eminently desirable but it is even more important that the patient should learn not to think of his cares and perplexities in the hours that ought to be devoted to rest or recreation. Everyone should cultivate a sport or hobby of some kind with which to crowd out inopportune thoughts.

Toxic Conditions.—In my experience the so-called uric acid diathesis is a very frequent complication of neurasthenia and much benefit is derived from treating it with an abundance of water and some compound of salicylic acid. Intestinal indigestion is also a frequent complication and although it is generally secondary to the nervous disturbance it should be palliated by appropriate nitrogenous diet, antiseptics (particularly salol) and mild laxatives. Purgation is very badly borne by neurasthenics. The excessive use of alcohol can only increase the degree of nervous exhaustion, if it does not lead to graver forms of disease. Theoretically the use of a strictly limited quantity, taken with food, might be beneficial, but in practice it is so difficult to secure the proper dosage that total abstinence is by far the best rule. The moderate use of tobacco is less likely to be harmful and may often be allowed. Neurasthenics, however, are especially sensitive to it and in some cases it must be given up altogether.

Coffee or tea should be allowed in any moderate amount to which the patient has been accustomed providing it does not interfere with sleep.

Peripheral Irritations.—The pain and annoyance due to disease in any part of the body may be a contributory cause of neurasthenia. The most important of such sources of irritation are disease of the intestine, anus or bladder, pelvic diseases of women, eye-strain and disease of the ear causing pain, tinnitus or vertigo. Such local diseases should generally be treated but their importance should not be exaggerated and severe measures must often be avoided or postponed. Strictly neurasthenic or hysteric pains must not be attributed to local disease; their treatment by local applications is almost invariably harmful because it fixes attention upon them and increases worry.

Reduction of Cortical Irritability.—In most cases the patient has become so sensitive to all unfavorable influences that even when sheltered from them to the utmost possible extent they still annoy and exhaust him. This is because the cerebral cortex is in a condition of irritable weakness and it is highly desirable that its irritability should be reduced. Many physicians try to do this by means of bromides but my own belief is that bromides continued for any length of time in efficient doses aggravate the disease. Codeine, in doses of one-fourth to one-half a grain three or four times daily, acts far more happily and helps toward a permanent cure. Opium in small doses, one-twelfth to one-fourth of a grain of the extract, is still more useful but in prescribing it the possible danger of the opium habit must be taken into account. It should be prescribed only in combination with other remedies, particularly strychnine and laxatives, so that the patient will have no discretion as to the size or frequency of the dose and will quickly get into trouble if he exceeds directions. This simple expedient almost wholly removes the danger. As a further safeguard the patient may be kept in ignorance of the ingredients of his prescription either by writing in such Latin as he cannot comprehend or by advising him not to read it for the general reason that any attention to the remedies exaggerates the symptoms. Opium is especially valuable in cases of morbid

fear and in those in which the recurrence of an agonizing idea makes the patient fear that he is becoming insane; in the latter it is indispensable. Unless the physician is convinced that the case is serious enough to justify the use of an opiate and confident of his own ability to use it skilfully he ought to withhold it and it should be discontinued as early as possible; but some cases are so serious and so obstinate that we cannot afford to reject so useful a remedy.

Sleep.—Neurasthenics should sleep as much as they can. If insomnia is troublesome at first it often yields to the combination of remedies chosen, without requiring the use of a direct hypnotic, which should always be avoided if possible. When wakefulness becomes a serious matter chloral is generally the best hypnotic; it is more efficient and less likely to cause depression of spirits next day than either sulphonal or trional. It should generally be omitted every second or third night and altogether discontinued as soon as possible.

Having reduced the waste of nervous energy to a minimum it will be much easier to increase its supply than if the latter alone were attempted.

Food.—The essentials in regard to food are that it should be abundant and taken at short intervals, that it should be rich in nitrogenous and phosphorized articles such as meat and eggs and that it should be eaten without fear of possible consequences. All theories about the stomach needing a rest must be ignored; it is the nervous system that must be rested and the digestive organs must be made to do their work. Anxious attention to diet does nothing but harm and digestive ferments seem to me to be altogether useless. On the other hand, strychnine, small doses of calomel and intestinal antiseptics are often of great service in aiding digestion. The weight should be recorded from time to time and its increase is a most valuable exhilarant for the patient who has been losing.

Medicines.—Many attempts have been made to supply nervous energy through drugs, on the whole with very little success. Phosphorus, phosphide of zinc and the hypophosphites I long ago discarded because they never seemed to be of the slightest use and the first two were generally distinctly harmful. The glycero-phosphates I have never tried, believing that if they are really useful the phosphorus compounds of eggs and meat are still better.

Strychnine probably stimulates the nutritive processes in the nerve cells and it seems to me to lessen the irritable weakness which is so characteristic of neurasthenia. Arsenic in its older, irritating forms is more likely to do harm than good, but as cacodylate of sodium it may be given much more freely and, with iron, is especially indicated in anemic patients. It is probably useful in other cases but I find it hard to be sure.

All neurasthenics are apt to infer from their bad feelings that their medicine is disagreeing with them and if the physician makes many changes on this account his usefulness will soon be at an end. Hence it is very important, in the early stage of treatment, to prescribe doses so small as to be absolutely safe and only for a very few days at a time. Then if there is any question as to the effect of the medicine one must insist that it is exactly right and that every bit be taken as originally ordered. The doses may be gradually increased according to need and when confidence has been established one may prescribe much more boldly.

Such remedies as electricity, massage, hydrotherapy, exercise and change of climate have been left to the last because I regard them as decidedly least in importance. Any of them may be used to advantage, especially for its psychic effect, as an adjuvant to a combination of the remedies already mentioned, but it would be a serious mistake to exalt it to the chief place. Most patients have a tendency greatly to exaggerate the physical action of remedies of this class and the physician ought gently to check this tendency. It is better to give the patient a rational explanation of the nature of his malady and a just idea of the proportionate value of remedies, thus guarding him from his morbid tendency to fads; the immediate effect of the mental impression may not be so brilliant but the permanent results will be far better.

Electricity.—In most cases of neurasthenia electricity may be used with distinct advantage although it is hard to say how much of its influence is mental and how much physical. I am in the habit of passing the galvanic current from the positive pole over either temple to the back of the neck on the opposite side, turning it on and off gradually and not exceeding a strength of three to five milliamperes. This may cause a little dizziness at first but tolerance for stronger currents is soon established and the applications seem to be especially useful in cases in which vertigo is a prominent symptom. The static breeze and spark are also useful, especially when applied to the seat of morbid sensations. The sensory stimulation seems to aid in replacing the morbid feelings by normal ones. Faradism may be made to serve the same purpose but as it is less convenient I do not use it except for diagnosis.

Massage.—I have had far less experience with massage than with electricity and wish to speak cautiously of it. Its effect in moving blood and lymph from the periphery toward the heart is well known and is of the greatest service in the rest cure during the time when active exercise is prohibited. The sensory stimulation may also be useful. The objections to it in ordinary cases are the extra expense, the time required, the fatigue involved and the danger that an enthusiastic and self-sufficient masseur will have a bad influence in presuming to give advice on matters altogether out of his province. In my own practice the objections have generally outweighed the advantages and the last objection has been most serious with masseurs recommended most highly by distinguished neurologists.

Hydrotherapy.—Although highly esteemed by men whose judgment commands respect hydro-

therapy is comparatively little used in this country. For neurasthenics the more elaborate methods have the same disadvantages as massage and are hardly applicable in private practice. The popular Turkish bath is generally harmful. On the other hand, a cool sponge bath in the morning is capable of doing a great deal of good, provided prompt reaction is secured and fatigue avoided. The water should not be too cold and with elderly patients the shock of cold water should always be avoided on account of the violent fluctuations of blood pressure caused by it. A comfortably warm bath at night may favor sleep and if it does there can be no objection to it.

Exercise.—The general principle of exercise is of great importance; its application, however, requires nice discrimination. I never allow my neurasthenic patients to go into a gymnasium or to take any form of so-called health exercises. On the other hand, every effort should be made to re-accustom the patient to his normal activities, first to his recreations, afterward to his work. For example, many patients say they can no longer read on account of the disturbance it causes. This real or fancied inability deprives them of a most valuable solace and diversion. In the absence of any serious disease of the eyes it is generally wise to instruct them to read for ten or fifteen minutes each day, no matter how unpleasant the effect may be nor how attention may wander, at the same time assuring them that only good can come of the attempt. The patient soon finds that he can read much more than he had thought possible and by gradually extending the time the ability to read in moderation is soon reacquired. Of course the physician must be careful not to demand too much at first for the avoidance of fear and of undue fatigue are essential. The same principle applies to walking, going about the city, meeting friends and, ultimately to work.

Climate.—Change of climate will generally be avoided if possible but it may be absolutely necessary when, as in the tropics or in malarial regions, the climatic conditions are an important factor in the causation of neurasthenia. There is a popular impression, shared to some extent by physicians, that the altitude of the Rocky Mountain region is a cause of neurasthenia and that persons becoming nervous here should forthwith "go to a lower altitude." This, I am quite sure, is a mistake, at least as far as altitudes of less than 7,000 feet are concerned. But if a patient in surroundings that are ordinarily healthful is to abandon his work for a time it may be well to consider whether removal to a different climate may not be advisable, provided good medical attendance and other necessary advantages can be obtained there. If a change is to be made those patients in whom irritability and restlessness predominate had better go to a moist, warm climate, while those who are languid and debilitated will do best in the dry, bracing air of mountain regions. In any event the place chosen must afford opportunities for agreeable rest and recreation.

The real difficulty in treating neurasthenia is not to know the remedies that may be used but to select and make effective that combination which best suits the individual patient, taking into account all his circumstances as well as the features of his disease. This problem the physician should approach in the spirit of an artist rather than in that of a pure scientist. He must select and emphasize some resources and ignore others. For his worst cases, if they can pay for it, he will generally choose the combination devised by S. Weir Mitchell and known as the rest cure. But if he does not have some of that great man's success in happily influencing the patient's mind, the rest, food, electricity and massage will do but little good and may even make matters worse. His greatest skill will be demanded by those who are not financially able to command the luxuries of the rest cure, who must continue at their work or return to it at the earliest possible moment, and yet must recover their health.

ABDOMINAL ASCITES WITH 150 TAPPINGS.

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Rosa W., Hungarian, sixty-nine years old; married when seventeen years old, widowed ten years; never been sick before. Mother died of cancer of the stomach at the age of sixty-nine years; father died when 102 years old, brother died of pneumonia when thirty-four years old; another living, sixty years of age; three sisters living, ages fifty, fifty-six and seventy years.

First menstruation when she was thirteen years old, regular. She had 12 children, last child twenty-five years ago; miscarriage of three months 23 years ago. Four children died, 8 living. Menopause at 50. She first became ill nine years ago with pain in the region of the liver, nausea, bilious vomiting and constipation; this pain in hepatic region shooting down into the right thigh and leg. Examination presents a slightly enlarged liver, painful to touch; heart, lungs and spleen normal. Microscopical examination of urine excludes kidney lesion; no diabetes. Vaginal examination presents slightly enlarged uterus, adnexa normal.

After a lapse of four months since this onset, patient's abdomen began to swell, ascites was gradually developing. No edema of legs present. At the end of five months the accumulation of abdominal fluid necessitated the first paracentesis, which took place in the year 1894 when 15 quarts of transparent straw-colored fluid were removed in one sitting. Patient rallied for a short time. Two months after her condition required a second tapping, which again withdrew about 15 quarts of fluid. Since this second tapping she kept fairly well with no advancing ascites for one year, when, in order to relieve dyspnea and obstruction to the organs, a third tapping was resorted to

and again 15 quarts of fluid removed. Since then patient has grown weaker, anemic and could not bear the presence of a large amount of fluid, which now accumulated more rapidly, say, about 10 quarts during every four weeks, and, therefore, systematic tappings every four weeks during the next five years and every two weeks for the following two years were found necessary. Amount of fluid at each sitting about 9½ quarts.

During the ten years of her ailment she has been tapped 150 times. Fluid from the abdominal cavity is of a pale straw color of specific gravity 1.015; has very slight amount of sediment after centrifugation and microscopically presents few leucocytes, some fat globules and few endothelial cells, staining shows no organisms present and no tubercle bacilli. Above tappings were done with a medium trochar, wound at the side of puncture healing perfectly. On several occasions attempts were made by me to insert a small drainage tube into the puncture opening and leave it in situ, but on each occasion symptoms of weakness and uneasiness on the part of the patient required its removal. Again, very slow removal of fluid through a small-sized canula did not bring about any decided change.

From the very beginning of the patient's ailment I have urged her to submit to a radical operation, but surgical interference has been refused, and this fact accounts for the numerous tappings performed on her during this long period. She is now in a fairly good condition, not bedridden save for a day or so after each tapping. She is quite active in her household and takes her bi-weekly tappings quite heroically and is willing to submit to this minor suffering rather than undergo the risk of an abdominal operation. Her temperature now is normal, pulse 92. Amount of urine discharged during twenty-four hours, about 48 ounces; acid reaction; spec. grav. 1.026, no casts; only small amount of earthy phosphates present. She has a slight edema of the legs, which disappears after each tapping. The circumference of her abdomen before tapping measures 47 inches; from the sternum to the pubes, 20 inches. After each tapping careful examination is made, but no tumor or neoplasm can be mapped out.

Her uterus is enlarged and presents a nodulated hard mass simulating a fibroid uterus. Adnexa could not be mapped out; no enlargement in the region of mesenteric glands to suggest mesenteric lesion as the cause of obstruction to the portal circulation. Syphilitic lesions excluded by the history of the patient. Long-standing of the disease and fair condition of the patient exclude cancer of peritoneum or neighboring organs or tuberculous peritonitis.

We can think of a neoplasm pressing upon the large veins and obstructing the return circulation, thus producing this pathological condition of dropsy. This is a tentative diagnosis of an ovarian cyst with formation of old adhesions. The necessity of an exploratory laparotomy has been urged by many medical men as well as gynecologists who had occasion to see this patient, among whom were the late Dr. Paul Mundé, Dr. H. Boldt, Dr. A. Brothers, Dr. Alfred Meyer and others.

The following figures present a medical curiosity: During the ten years of my patient's illness the first 3 tappings gave 45 quarts and next 147 tappings at 9½ quarts, 1,396½ quarts; or, together, 1,441½ quarts or 2,883 pints or fluid pounds; or 360⅜ gallons.

Scott reports (Anomalies of Medicine, Gould and Pyle, 1900) a case of ascites in which 928 pints of water were drawn in 24 successive tappings. Van Wy mentions 1,256 pounds of fluid being drawn from abdomen of a woman in five years. Kaltschmidt describes a case of ascites in which in 12 paracenteses 500 pounds of fluid were removed. In 1721 Morand reported 2 cases of ascites, in one of which by means of 57 paracenteses 970 pounds of fluid were drawn off in twenty-two months, in the other 1,708 pounds in ten months. There are several cases on record in which ovarian dropsies have weighed over 100 pounds. Blanchard mentions a uterine dropsy of 80 pounds. Philosophical Transactions contain account of a case of hydronephrosis in which there were 240 pounds of water in the sac.

This case presents several interesting points: (1) On account of numerous tappings and large and continuous accumulations of fluid a human body could produce. (2) The advanced age of the patient and tolerably good health, unimpaired by the long, continuous drain of the constitution and obstructive circulation to the vital organs. (3) The possibility of a permanent cure of this chronic abdominal ascites by a radical operation, which would tend to break up the old adhesions and fasten the omentum to the parietal peritoneum, thus relieving the obstructive portal circulation and establishing a peritoneal circulation.

GASTRO-ENTEROSTOMY WITHOUT A "LOOP."*

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The mortality of gastro-enterostomy is still so high that few medical men will consider the operation within the domain of practicable therapeutics. It is more often regarded as a proper means of providing euthanasia. But there is one group of statistics, that from Czerny's clinic in Heidelberg, which represents a particular method of operating, and which has given, in benign cases, a death rate of only five per cent., almost as low as that for the interval operation for appendicitis. It is the more worthy of emphasis as it seems to have received little notice in contemporary literature.

The success revealed in this group of statistics is due to the fact that the method of anastomosis preserves the proper anatomical relationship of

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the stomach and gut. In all the other eighty odd methods which have been advocated, except gastro-duodenostomy, this relationship has been violated. The causes of death as given in their usual order of frequency are: (1) Shock, collapse, asthenia or inanition, all practically the same when the debilitated condition of the patients usually considered ready for so grave an interference, is considered; (2) infection and peritonitis as the result of contamination during the operation or subsequently. There is a connection here with the most frequent causes of death in that the perfectly healthy peritoneum can take care of a great deal of sepsis, but the diseased abdomen of a weakly person is quite another matter. Nevertheless such excuses are not altogether valid, and there is room for improvement. (3) Pneumonia, an accident liable to occur like shock or collapse, after any operation on debilitated individuals, especially after the deep narcotization so often necessary to obtain relaxation in the presence of epigastric wounds. Such wounds also interfere afterwards with coughing and clearing of the respiratory tract. It has often been attributed to the inhalation of stomach contents during the operation, a possibility which should be avoidable by lavage just prior to the anesthesia. (4) The fourth most common cause of death, and in the minds of most surgeons it probably ranks much higher, is obstruction in one form or another. That accompanied by "vicious circle vomiting" is by far the most common and is dependent upon the escape of stomach contents into the proximal instead of the distal segment of the anastomosed gut. The lumen of the distal segment becomes displaced from its intended position opposite the opening in the stomach and seems to be mechanically occluded by the pressure against it of the distended adjoining proximal segment. There may also be a physiological factor in the process, as Chlumskij has shown by animal experimentation, that filling of the duodenum inhibits the peristalsis of the stomach. This accident caused a fatal ending in the second gastro-enterostomy on record, and the numerous modifications of the original method which have been introduced to avoid it, testify to its importance and reveal the dread of it as a factor in much of the other mortality. But complicated and time-wasting procedures, often involving multiple openings in the gut, with all their increased chances of sepsis, can be largely eliminated, and if, in consequence, the death rate can be brought down to five per cent., the operation should not be considered one of last resort.

All except two or possibly three of the methods are what might be called "loop" operations. That is, a loop of jejunum or ileum is carried in front of the colon, or behind it through its mesentery, and joined to the front or back of the stomach. The length or shortness of the loop, the relation of it and its legs to each other, or the stomach and isoperistalsis, are of some importance, as a loop operation is quite often the only one possible. To avoid dangerous vomiting, an ever present chance in this method, experience has demonstrated that the proximal leg of the loop must at least be long enough to escape tension, or compression of the colon; that a broad curve where it is attached to the stomach is better than a sharp angular one; that the principle of isoperistalsis should be observed; that the fistula should not exceed 1½ to 2 inches in length, for if it does the difficulties of suturing favor spur formation; that the fistula should not be smaller than the diameter of the gut for fear of cicatricial contraction; that it should be as near as possible to the greater curvature or in the most dependent portion of the stomach; and above all that there should be an enteroanastomosis at the base of the legs of the loop. Roux's method of gastro-enterostomy "en Y," one of the three which does not involve a loop, approaches the correct anatomical relationship, but aside from the dangers of vicious circle vomiting, which has occurred even in Roux's operation (apparently from error in technic), and of obstruction by volvulus of the loop or hernia over it of the rest of the intestine, there are also in all such methods the added risks dependent upon time-consuming procedures and multiple openings in the gut. The operation in two stages, of which the McGraw elastic ligature is the best known, though a reasonable guarantee against infection, if used with the "loop" possesses all the disadvantages of that method and some additional uncertainties. Of the great number of mechanical appliances which have been brought forward, the Murphy button is, of course, the best, and is occasionally almost indispensable. Its well-known tendency to fall into the stomach and remain there, especially when the line of anastomosis is reinforced by suture, even in spite of Hildebrand's and Weir's modification of the distal half of the button, is a very serious objection to its use. There is at least one case on record in which after death from hematemesis, subsequent to gastro-enterostomy, the button was found imbedded in an ulcer in the stomach. There are, to be sure, numerous instances of its indefinite retention without symptoms, one for 6½ years, but there are always unpleasant possibilities. Nevertheless in all loop operations in addition to the usual advantages of saving time, the button has a definite usefulness in a certain amount of protection against persistent vomiting. One surgeon of large experience informs me, that before he adopted it he lost many cases from this complication, but since using it regularly he has not, in some sixty or seventy gastro-enterostomies, had a single instance of the vicious circle difficulty (and he always used the loop method). His experience seems better than most operators, but at any rate, the presence of the button in the summit of the loop tends to prevent angular kinking. The great number of other devices of a similar nature shows the need of one which, unlike them, can be employed without risk of extravasation of intestinal contents at the time of introduction, or later; which establishes the desired fistula immediately; which is as quick in applica-

tion as the button, and is certain of not remaining in the stomach or duodenum. Until such an appliance is invented, and there is a real need of one, the suture remains as the preferable means of joining the stomach and gut, when time permits.

Of the remaining two methods not involving a loop, the first to be mentioned is gastro-duodenostomy. The union of the stomach with the descending duodenum, introduced by Billroth for restoring continuity after pylorectomy and improved by Kocher, had been utilized in certain cases of benign stenosis by Henle and then Villard, but lately has been advanced by Finney as a substitute for all gastro-jejunostomies. In the Finney operation, its prototype the Heinecke-Mikulicz pyloroplasty, is amplified by transposing the transverse anterior division of the pylorus into a horseshoe-shaped ∩ incision six to ten inches long through the under part of the pylorus and adjoining greater curvature of the stomach and descending portion of the duodenum. This large opening provides free drainage and is anatomically and physiologically correct, and when circumstances permit the few written reports and the many verbal ones I have heard, seem to favor it without qualification. But gastrojejunostomy, if only because it is simpler, is undoubtedly a necessity for the greater number of cases, and the method described by Petersen, as used in Czerny's clinic is the one I wish to call attention to. He reports 215 cases without a single instance of serious vomiting. It is based on the simple anatomical principle that the first few inches of the jejunum descend vertically behind the stomach without any turns, and in this part lie directly in contact with the posterior surface of the stomach, separated from it only by the non-vascular portion of the mesocolon.

The ordinary retrocolica posterior operation is performed by drawing the omentum and transverse colon out of the median epigastric wound, and stitching the margins of the exposed posterior surface of the stomach near the greater curvature, to the edges of a rent made in the mesocolon. Then the jejunum near its origin is held perpendicularly to the spine, and attached some two to four inches below its origin at the plica duodenojejunalis, to the exposed posterior surface of the stomach by a row of Lembert sutures placed transversely to the long axis of the gut, and in its free border. In front of this the stomach and intestine are opened with due precautions, and the fistula completed as usual with stitches or the Murphy button and surrounded externally by a continuation of the Lembert stitches. The proximity of the fistula to the plica is determined by the degree of dilatation of the stomach, and the location of the lower border of that viscus should therefore be noted as soon as the abdomen is opened. My own rather limited experience with this method has been in favor of suture only, but if time is limited, then the button reinforced by suture externally. The jejunum is thus anastomosed to the posterior surface of the stomach in its normal descending position and without any twists. There is no loop to become occluded, and no chance for vovulus or hernia above it.

The following cases serve well to illustrate the application of this method. They were all operated upon in the St. Francis Hospital:

Case I.—M. H., thirty-years old, laborer; presented all the symptoms of pyloric cancer with an epigastric tumor, persistent vomiting and pain. In addition he had pulmonary phthisis. Operation July 27, 1903, by the Czerny-Petersen method with a Murphy button reinforced by sutures. The anastomosis was accomplished at a point about two inches from the beginning of the jejunum. Recovery uneventful; liquid food was given the following morning or within fourteen hours. Thereafter there was no pain and no vomiting, and the patient rapidly improved. He left the hospital at the end of a month without having passed the button. I have since heard that he died sometime in November from his phthisis.

The relief of the vomiting in this case was to be expected, but the total disappearance of pain was more worthy of note and indicated what may be done for irremovable gastric cancer even without pyloric obstruction. Furthermore, some thickened simple ulcers of the stomach are indistinguishable from cancer without the aid of a microscope, and for these gastrojejunostomy is curative.

Case II.—A. D., fifty years old, female servant; gave a typical history of chronic gastric ulcer, with epigastric tenderness and vomiting. The latter occurred regularly after taking food. She steadily lost ground, although under medical treatment for three weeks. Operation August 18, 1903, by the Czerny-Petersen method with a Murphy button reinforced by suture. The anastomosis was made about 3½ inches from the plica duodenojejunalis.

Liquid feeding was begun the following day. There was no vomiting and no complaint of pain. But about a week later a bad cystitis developed from catheterization. This was followed by uremia and death on August 31. Autopsy showed the anastomosis perfect but with the button in the stomach. The latter was somewhat contracted (at the time of operation its lower border reached to the umbilicus) and funnel-shaped with the fistula at the apex. No ulcer was discovered. The cause of death was a suppurative cystitis and pylonephritis. The other organs were normal.

This case was probably one of chronic gastritis, with dilatation and the constant distress and vomiting, with the consequent inability to work, and loss of flesh and strength seemed to justify the operation. At any rate, the relief was marked until uremia developed.

Case III.—M. P., forty-five years old, housewife, was sent to the hospital with a diagnosis of gastric ulcer or carcinoma. While under medical treatment and observation there was a constant complaint of epigastric pain after taking food,

and there was occasional vomiting. There had been a loss of forty pounds in weight in the past six months. There seemed to be a small tumor in the region of the pylorus. Operation September 26, revealed a cirrhotic liver and a slightly congested and thickened area, anteriorly, near the pylorus and lesser curvature. A gastrojejunostomy was performed as in the other cases, about three inches below the end of the duodenum. As the button had failed to pass in the other patients the anastomosis was accomplished by suture entirely, the gut being opened transversely around its free border to an extent equal to half the circumference. Liquid feeding was begun the next day, and the complaints ceased. The patient left the hospital at the end of three weeks, professing to be relieved, but without any noticeable gain in weight.

I have since heard that the former symptoms have returned, and believe them due to a closure of the fistula. Mayo has called attention to the need in such cases, of artificially narrowing the pylorus to prevent obliteration of the new opening. The condition of advanced cirrhosis in the liver might properly be said to have caused all the symptoms here, and to have contraindicated any operation. The propriety of the interference seemed questionable when the liver was carefully observed, but the operation had then progressed so far that it was deemed best to complete it, and the subsequent relief of the gastric symptoms while in the hospital, has justified it in my eyes. That a relapse has occurred shows the error in technic in not narrowing the pylorus. This was thought of during the operation, but the method, by suture, had taken so long (fifty minutes) and the patient was so asthenic, that the precaution was omitted.

Case IV.—A. R., twenty-eight years old, housewife; came to the medical service with a history and diagnosis of gastric ulcer. While under treatment she developed a suppurative appendicitis for which I operated in July. During and after recovery the gastric symptoms persisted. There had been an occasional hematemesis. The woman was extremely emaciated and seemed starving to death. Operation on September 27 by the Czerny-Petersen method revealed nothing abnormal in the gross appearance of the stomach, although there seemed to be a thickened area posteriorly near the fundus. But the general condition did not warrant a very careful exploration and the anastomosis was done with a Murphy button reinforced by suture as quickly as possible. The fistula was placed about 2½ inches below the beginning of the jejunum. Recovery was uneventful, liquid feeding was begun that night on account of the great asthenia, and there was a noticeable and rapid gain in strength and weight.

The vomiting ceased, and for several weeks the other complaints also. The button has not been recovered and lately some of the symptoms seem to have returned probably from contraction of the fistula as the pylorus was not narrowed and also possibly from the irritation of the stomach by the retained button.

Case V.—A. H., fifty years old, mechanic; had a Heinrich-Mikulicz pyloroplasty performed by me in December, 1902, for cicatricial stenosis. During the subsequent six months he was perfectly well and gained thirty pounds in weight. Then the obstructive symptoms began to return and on October 5, 1903, I made a gastrojejunostomy by the Czerny-Petersen method, using sutures only, and placing the fistula about 3½ inches below the end of the duodenum. As in Case III the opening in the gut was made transversely to its long axis and included one-half of the circumference of the free border. The condition of the pylorus was interesting. At the first operation nine months previously, the pyloroplasty before closing the abdomen had comfortably admitted the index finger invaginating into it the anterior wall of the greatly dilated stomach. In the second operation the pylorus was surrounded by adhesions, high up under the liver, and seemed practically closed. Recovery from the second operation was uneventful, and I found the patient at work in his shop on the eleventh day afterward. All symptoms have been completely relieved except that he tells me he has to be careful of his diet. Fermentable foods seem to cause dyspepsia, otherwise he is as well as ever. He also says that for the first few months after the first operation he had no discomfort at all and could eat anything, whereas now he has no discomfort as long as he avoids sugars, starches and cabbage. As he is an intelligent man, it seems to show that a gastroduodenostomy is preferable to gastrojejunostomy and helps to demonstrate that the former is physiologically better when possible.

If the retrocolica posterior method as described above, is impracticable, owing to adlesions or the location of the disease, then an anterocolica anterior anastomosis may have to be undertaken. For this statistics favor the loop operation with an entero-anastomosis at the base of its legs. Roux's method "en Y" with transverse section of the gut and its mesentery and implantation of the distal segment into the stomach and of the proximal into the distal lower down, is perhaps anatomically better, but involves numerous unpleasant possibilities and has not proved popular.

Whatever method is employed, and however excellent the immediate result experience has shown that gastro-enterostomy is not to be practised without good reasons. The contraction of the fistula and means for preventing it have been mentioned and the retention of the button. Peptic ulcers in the jejunum have several times been verified after death from them by perforation and hemorrhage. There has sometimes been a troublesome diarrhea of longer or shorter duration, and quite frequently an impaired digestion for fats has been noted. But the operation is universally conceded to be the only relief for benign or malignant pyloric stenosis, though not as generally accepted as it should be for painful, simple

or neoplastic ulcer. It is by all means the simplest and safest method of dealing with the repeated hemorrhages from benign ulceration, and I believe it will come into general use for much of the intractable gastric indigestion which incapacitates the patient for hard work, especially for atonic and dilated stomachs.

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HOME TREATMENT OF THE TUBERCULOUS "IS JUST AS GOOD"—BUT IT IS NOT.

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History repeats itself in medicine as it does in society. The feverish excitement and consequent reaction in the political and financial worlds find their counterpart in the evolution and enthusiasm of certain theories and their gradual decline and even slow death in the medical domain.

A short review of the methods or rather opinions in reference to the treatment of consumptives within the last two decades would assist us to elucidate the points we intend to discuss.

The Serum Theory.—It is within the recollection of nearly everyone of you when a number of physicians, small and big, poor and rich, left their homesteads for the Mecca—Berlin, where they would learn of the methods of administration and procure the tuberculin. It was a famous exodus. But in the height of the excitement the disciples had not followed the detailed instructions of the famous apostle. Instead of administering the serum in small and gradually increasing doses, the physicians carried off the trophy with the idea that the more the merrier: the tuberculin was given in exceedingly large quantities to the detriment of the reputation of the serum, the great discoverer, the pupils and the patients experimented upon.

Racing homeward, to be the first ones to herald the news, the expónents of this new discovery failed to be impressed by Robert Koch that this remedy is not to be administered to patients with any degree of temperature. Because of the lack of the above-mentioned accuracy—a reaction set in, the serum fell in disgrace and still more, it was pronounced dangerous. Hence the impression upon the lay mind: "no cure for consumption." And yet, quite recently, the same serum in the hands of well-known clinicians, applied in proper dosage and in appropriate cases, is reported to prove beneficial and even to possess positive curative properties.

The Climatic Treatment.—That change of climate in general, certain climates in particular and fresh air above all are beneficial in the treatment of the tuberculous was recognized in the prehistoric era. Nothing new under the sun. But theories became dominant and current that consumptives (indiscriminately) are being cured (?) when sent to high elevations. The higher the better. There hemorrhages cease, patients take on flesh in no time and get cured as by magic. Colorado and its climatic surroundings became the Mecca this time—and thousands upon thousands, incipient as well as far-advanced cases, flocked there. Taken from the East on stretchers, arriving in the Far West, a few are benefited, more are returned home in "boxes" or advised to return home, there to await the inevitable.

What hardships had those unfortunates to undergo before they reached Colorado; before they were installed in any appropriate place. What fortunes are expended (we have in mind the Eastern people and the poorer class from whose midst the mass of consumptives is recruited, and for whom a hundred dollars is probably the savings of a lifetime) and no cure, nay worse than that. Thrown among strangers, far away from home and surroundings many become homesick, many are exhausted from prolonged travel and lack of adequate accommodations on arrival, they find themselves in a worse condition than when they left their homes in the East. It takes quite a number of weeks to recuperate if they do at all. Again those with cardiac disease complicating their pulmonary affection fare badly at very high altitudes. Hence many a one who should have been advised against undertaking such a trip but should have remained at or near home, entrusting their fate to Providence—inevitably raise lamentations and also repeat, "there is no cure for consumption." Their respective physicians learning of the "results" are losing heart and faith in high altitudes. Yet there are cases upon cases known to us who merely held their own while down here, even in the mountainous regions, have done remarkably well in Colorado or in the Southwest.

Sanitarium Treatment of the Tuberculous.—The next step in the evolution and in the right direction was and is the sanitarium treatment,—sanitaria located within easy reach by the afflicted and by their respective families, located in the mountains at a moderate altitude. This idea held sway unshaken for a number of years, and greatly encouraged by clinicians and justly so supported by the medical press.

Experience has taught us by this time to be circumspect in our prognostications in any given case, not to be too optimistic as to positive and permanent cures in tuberculosis. We must bear in mind that not all cases, even under the best of treatment and surroundings, will recover. We should be elated and greatly encouraged if some good results occur, skeptical as we are (and in truth we should be) to the overwhelming reports of high percentages of cures.

The writer's experience in closely observing more than five hundred cases in his sanitarium and following up cases in private and consulting practice, also of other close-by sanitariums, is that tuberculosis is not as easily, or as speedily

and, above all, as permanently cured, as many would have us believe.

It is a melancholy statement, I confess, but it is unfortunately true, based as it is upon personal observation and close study. There may be extenuating reasons for the poor showing, but at any rate the millennium has not come as yet. It is our belief, however, that the sanitarium is the ideal place for those of the incipient as well as second stage cases.

Those of the first class have certainly justifiable expectations for full recovery, provided they are enabled to stay out long enough. Not being far away from home they are frequently visited by relations and friends, on certain occasions they might be allowed to take a short trip home, and thus break the monotony of sanitarium life,—hence no home sickness.

We will not dilate upon the benefits the tuberculous are bound to derive in a properly conducted sanitarium. We will only mention that routine and discipline are more essential to recovery than mere cheerful home surroundings. The open-air treatment which is at present universally recognized can nowhere be so satisfactorily carried out as it is in a sanitarium where each and every inmate is under direct supervision of the physician in charge, while nurses ministering to the comforts of the patients, help and urge to carry out the rules of the institution. In the treatment of tuberculosis like in that of other diseases we must often strenuously ignore all the whims and supposed inclinations. Mothers' unmasked anxieties, sisters' indulgences on one hand and shunning of the afflicted by his previous friends on the other, are not conducive to and very often miscarry the good results expected. They may kill by kindness.

Utilizing the aforesaid as a stepping stone we will alight now to the consideration of the so-called "home treatment" of tuberculosis which is by some deemed "just as good" as sanitarium treatment. Is this a new idea, and, if so, what is its underlying principle? Or is it a reaction number three? Then, we ask, after which great enthusiasm did it set in? Being aware, however, of the fact that the advocates or promoters of the idea of the "roof and fire escape" treatment of consumption as an imitation of sanitarium open-air methods have in mind only those hopelessly poor who can under no circumstances better themselves otherwise, we wish nevertheless to emphatically protest against this "new treatment," the "home treatment," which means in reality, as we will explain later, nothing more than a return to the primitive methods, but having obtained the significance of a "new treatment" will imply the casting aside of the old—the rational one.

Our nation is a reading public; no medical topic is foreign to them, and not all are capable or willing to digest the whole, and many are satisfied with headlines, and consequent dyspepsia is the result.

We wish to sound a note of warning that if this new idea shall become current and, so to say, popular, it will harm a seventh part of humanity, the consumptive, in more ways than one. "Some air is better than no air" say the benevolent savants of their new concocted doctrine, and, therefore, if the poor patient is yet in a physicial condition to climb three or four flights of stairs he is advised to ascend to the roof and stay there. He may also put a bed on the fire escape and enjoy "open-air and fresh-air treatment" up there. But foul air is bad air and is in no way fit for ventilating a septic and decomposing lung. Who are the would-be recipients of this fruitful advice? These are tenement-house dwellers, the tenements being situated in the heart of crowded districts, where myriads of microbes are floating in the air and ready to nestle themselves in the nostrils and the mouth of the person who, while sitting on the roof and believing to inflate his lungs with fresh air, inhales and swallows objectionable and deleterious parasites. The roof or the fire escape, being fifty or even one hundred feet above the ground, does not convey to our mind even a tolerable imitation of country life. To live near parks would certainly be beneficial for these consumptives who are compelled to stay in the city and at home—but how many of those poor people can afford to indulge in such luxuries—rents being so high? Again, presuming for a moment that the fire escape and the roof air should be of benefit, how much of it would the patients enjoy? We certainly want for them sunlight all the time—at least most of the time, but our earth does not pay much attention to their needs, it keeps on turning on its axis, carrying the patient, the tenement house, including roof and fire escape away from the healing sun rays, and would not linger for Mr. A., nor even for Mrs. G., for the shortest conceivable time. We must also bear in mind that the tenement house roof is common property for twenty or thirty families who use it as a drying place for their weekly laundry—and our consumptive may prove quite an unwelcome visitor up there on one hand, on the other hand the fumes emanating from the newly washed linens do not tend to improve the condition of the "lunger." The fire escape again, must be, and justly so, unencumbered for the escape of tenants in case of fire, and we should be the last ones to openly conflict with the adequate regulations of the city authorities in advising our patients to violate the law by putting a bed or an easy chair there. We may advise our patients to visit parks, but this may prove for many very fatiguing, for many physically impossible, and for a number, in the crowded districts, the parks are as thickly populated and dusty as the tenements themselves.

And who is to take care of the consumptive "at home?" This certainly devolves upon the poor wife or mother who has her hands full in caring for a number of small children and the house. Can she do it in any way approaching satisfaction?

We should not fail to mention the fact that every consumptive at any stage of his or her sickness, under the tenement-house surroundings, is positively a source of infection to immediate family and neighbors, all instructions of health boards and attending physicians notwithstanding.

We must also dwell for a while longer on the point of indulgence we mentioned before. Not to aggravate the husband, the son or the daughter, the wife or mother will often ignore the iron-clad rules laid down for the patient by the well-intentioned physician in charge, and not only miscarry the instructions but unwillingly harm their charge, no matter whether it concerns the hours our patient shall spend outdoors or the quantity and quality of food he or she is allowed or prohibited to indulge in. From our actual experience in maintaining tuberculosis patients in our sanitarium we have convinced ourselves that they are capricious, irritable and selfish in their relations towards the immediate family. They are the greatest tormentors of the family; not being conscious of the extent of their ailments and ever hopeful of speedy recovery they are very impatient and never satisfied with what is done for them. Naturally the family will exert itself in every way to allay irritability.

In this connection and as a means of illustration I will briefly record two cases, whose histories will bear directly upon the points under consideration:

Case I.—Miss L., nineteen years old, one of eight children; "shopgirl" by trade. Father an elderly man, working hard to support family. This girl entered sanitarium in August, 1902. Physical examination revealed consolidation in right upper lobe anteriorly and posteriorly. Stage active. Considerable P.M. temperature. She coughs a good deal with much expectoration; lost during the summer more than 20 pounds in weight. Has night sweats. Appetite poor. Very weak. She remained under our care nearly four months. She has improved considerably both objectively and subjectively. Her temperature was about normal, she ceased to cough, felt a good deal stronger, was able to take long walks and rides without fatigue. Her local condition also showed improvement proportionately. Though the consolidated area did not resolve but there were justifiable hopes of having the disease arrested. She begged to be allowed to go home for the winter months to return in the early spring. For her benefit her parents moved from the crowded district, where she contracted the disease, to a more quiet and refined neighborhood, their house facing one of the small city parks. Believing, as we did, that the months of December, January and February, the cold winter months, would at least not retard her gained health, if not helping her along in the way of further improvement and instructing her to live in the park, to eat there, etc., I permitted her to go home. While in the city, sometime in January that year, I went to the park in the hope of finding this girl and other patients (who left the sanitarium about the same time, and who were living in the same neighborhood) there. It was a fine cold and sunny morning. To my chagrin I found none of my patients there. I called at the girl's home and found her in bed in a darkened room, though with windows facing the park. It was nearly 11 A.M. Her mother told me she did wake her and tried to persuade her to go out in the air, but she would not, "she was so tired and lazy and wanted to rest." The mother, of course, gave in.

Her appetite was again capricious and poor, and she was losing the weight she gained while in Liberty. Sometime in February, while in the city, I was asked to see her and was grieved to find that the active stage made its appearance again and disintegration of the lung had set in. They wanted my opinion as to the possibility of removing her to the sanitarium again, and I concurred with the sense of the attending physician that this move might prove fatal and advised rest in bed and await developments.

By the end of May her fever had somewhat abated, and reluctantly I have readmitted her to the sanitarium. A large suppurating cavity developed in the interim and she was in a very weak condition. Though her subjective symptoms improved somewhat, she continued to lose flesh, the cavity enlarging. She continued fairly well till October when cardiac debility made itself manifest, when I insisted upon taking her home where, in a few weeks, came the final solution.

This case illustrates fully how much harm motherly indulgence or lack of rigid discipline has done to this girl. There was plenty of nourishment, mother's care, physician's attendance and stringent instructions both by the attending physician and myself. Why such a decline and return to the worse? The change of air has undoubtedly contributed its share, but the unenforced sanitarium rules had done the most.

Case II.—Mrs. M. B., thirty-one years old; fourteen years married; three children. Youngest child five years old. Family history negative. Entered sanitarium August 12, 1902. Eight months before she started to cough. She thought she might have become infected by whooping cough from her child. Has had six attacks of hemoptysis—never to any considerable extent. Much expectoration, no pain, but only a sense of burning on the left side. No night-sweats. Lost somewhat in weight. Anemic. Temperature at 4 P.M. 99.5° F., pulse 80, weight 135 pounds. Inspection showed a fairly nourished body with slight recession on right side. Auscultation revealed consolidated area right middle lobe anteriorly and posteriorly. She too continued improving while in the sanitarium. On November 23 the following entry was made:

"Though consolidation still marked, yet there are no râles on the right lung. Left lung clear, but suspicious area posteriorly. Weight 145 pounds (gain of 10 pounds within fourteen weeks)." By this time she too had made up her

mind to go to the city. Her family lived in the Eightieth streets, having two parks at her disposal. She would certainly take good care of herself, follow strictly sanitarium régime, and I did not oppose it, as in the former case. I saw her twice during the winter months (December 1 to March 1). She seemed to hold her ground well, the only change toward the worse was that she coughed slightly more than she did while up in Liberty, but as she intended to come out in the early spring again I did not entertain any apprehensions. But she did not come out and instead lingered at home, engaged her time in light housework and care of the children and by and by fell into the old habits, ignoring all instructions and precautions. She gradually became so weak as not to be able to walk out into the air, even if she wished to do so. I did not hear from her until July 27 last, when she was brought to the sanitarium by her sister from Troy, N. Y., whither she had gone for a change of air. Her condition was appalling; pale, emaciated, pulse hardly perceptible, could not walk without assistance. She lost 30 pounds in weight. A large cavity had formed at the place where the consolidated but seemingly cicatrizing area had existed. The left lung was in catarrhal condition with high P.M. temperature. During her six weeks' stay, under the best of care and attention, she had made no progress, she was losing weight, taking little nourishment. A catarrhal laryngitis set in as a complication in the middle of September, which did not yield to treatment. Seeing the decline, I advised her to go home, as I could entertain no hope for improvement. I saw her recently with their family physician; she is going speedily down hill. Her hoarseness did not leave her; apparently a tuberculous ladyngitis developed. My prognosis was very unfavorable and had the painful mission to so inform her husband. Now, this woman was old and sensible enough to care for herself; she had the necessary means to supply her wants, but there was nobody to urge her in doing her full duty to herself and she relapsed and badly so.

The two cases cited will suffice in demonstrating how inadequate is the so-called "home treatment," even for those who have learned of the systematic ways in an institution.

The question may naturally arise, what are we to do with the unfortunate army of the poor who can't afford country life and have no means of entering special sanitariums? In answer, would say that there are contingencies and incidents in society and communities at large which somebody has to cope with, and therein lies our protest against popularizing the idea of "home treatment." Our contention is, what the nation, individual States, municipalities, philanthropists and private enterprise do with regard to other diseases (yellow fever, smallpox, diphtheria, typhoid fever, fractured bones, fibrous uteri, etc.) will do or will have to do, and in the most advantageous manner, in reference to the poor tuberculous.

Our Federal Government has established special sanitaria for the treatment of the consumptives discovered in the ranks of the Army and Navy. These sanitaria are located in the most desirable quarters, under the best of surroundings, and most gratifying results are reported.

Are not citizens at large entitled to the same consideration in the hands of their respective States and Cities? With the idea of the "new treatment" the "home treatment," before the public, our consumptives will be left to their fate or depend upon the support of kind-hearted neighbors or upon city charities—all this may bring temporary relief, but would never lead to ultimate results.

On the other hand, being impressed by the family physician, by consultants, by both medical and lay press, that only country, or better still, sanitarium life can offer a fair chance of patients' recovery, the immediate family and relatives will strain their resources to supply the necessary funds for a longer or shorter time. The public's demand for help in this direction will arouse the respective governments from apathy; philanthropists will direct their munificence into this channel, private enterprise will not linger long behind and this great want will be satisfied. Why, we have so many hospitals (State, city, of private charity, private hospitals) and so few sanitaria—and the need of them is so great! But with the idea that "home treatment" is "just as good" all efforts will be relaxed and the poor consumptives will become the innocent victims hereby.

Summary.—It is our duty to have the public at large impressed with the importance of fresh air, nourishing food and, above all, rigid supervision by physicians and nurses. These ends may be best attained by establishing sanitaria in sufficient numbers to supply the demand, and that "home treatment" as a "treatment" is not only a step backward and is meaningless, but it may prove a menace to consumptives and mislead the public mind into believing it to be a "new treatment"—and therefore this term should not appear upon the pages of our medical press.

I am pleased to report that since the above was written great efforts are being exerted in behalf of the consumptive poor, both as to prevention and cure, under the able supervision and enthusiastic management of our new Health Commissioner and medical officer, Dr. Hermann Biggs. The Riverside Sanatorium is enlarged and better accommodations are afforded the inmates.

Sites are being looked and "appropriations" hoped for the establishment of an out of town Sanatorium in the Orange or Sullivan County mountains for the treatment of incipient tuberculous cases.

Special classes for the treatment of the tuberculous are being established in connection with the city dispensaries under the supervision of physicians trained for this purpose. Trained nurses are attached to these classes, who visit

those ambulatory cases at their homes, ministering to their needs and supplying them, in case of need, with material help from special funds. From the materials of these special classes patients will be assorted and sent to the respective municipal Sanatoria. Stringent and vigorous measures are taken to suppress the spitting nuisance. The New York State Sanatorium is expected to open its doors in the coming midsummer. And so we are moving on.

1847 Madison Avenue.

THE IMPORTANCE OF DROPSY AS A SYMPTOM.*

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The term "dropsy" is a shortening of the word "Hydropisie," meaning "watery appearance." It is applied to the presence of an *abnormal* amount of watery fluid transuded from the blood vessels or channels into the cellular tissues and lymph spaces (Gould).

The term "edema" (to swell), is used when there is a moderate surplus of water in the tissues; when excessive, it is termed "anasarca" (through the flesh), and if the serous cavities are also the seat of the transudate the condition is called "general dropsy," or the prefix "hydro-" may be attached to the cavity or part affected.

An abnormal quantity of fluid in a cavity, when unaccompanied by fever, is called a *transudate;* when due to inflammation, as indicated by fever and other symptoms of inflammation it is then called an *exudate.*

Edema or dropsy may be unilateral, bilateral, local or general. When unilateral, or local, the cause is to be found in the immediate proximity, and it always produces obstruction to the *return* circulation. When bilateral it may be due to the rare condition of a point of obstruction at corresponding parts of the two sides affected, as, for instance, thrombosis of both femorals may produce a bilateral symmetrical edema of the legs. It is the rule, however, in bilateral or general edema to find a central cause, either in the heart, kidneys, liver, lungs or blood.

The cause of *local* edema is: mechanical pressure upon the capillaries, veins or lymph spaces. It may be acute, as from an abscess: subacute, as from a rapidly growing tumor; chronic, as from lymphangitis, after operations or fracture of bones, with inclusion of some veins in the scar tissue surrounding the site of the lesion, or imperfect apposition of the parts and consequent failure to establish collateral circulation; following a phlebitis, especially of the femoral; neoplasms of any kind, particularly those affecting the lymphatic glands as these are located in chains in the flexures of the body, as in the axilla or groin, and always in close relation to the veins.

Section of a nerve, for example, the sciatic, will paralyze the arteries supplying the part, causing dilatation of the arteries and capillaries and a pouring out of more blood than the lymphatics and veins can care for, with resulting stasis and fluid accumulation (Quain).

The cause of local edema in abscess is from arterial dilatation, due to the excessive amount of blood present, as well as to the mechanical pressure offered by the pus which forms and permeates the tissues.

An important point often overlooked by the physican is the occurrence of edema of the ankles as a result of, or part of, anemia, and this condition is usually accompanied by a slight fever, irregular in type, seldom going beyond 101° or 102° F. It may simulate, or, in fact, be partly the cause of the slight fever noticed in incipient phthisis. After a severe attack of typhoid fever or other long continued toxemia, the low fever and slight malleolar dropsy that baffle all efforts to overcome may respond to a vigorous course of hematinics.

This malleolar dropsy in anemia is chiefly due to an altered composition of the blood caused by the primary disease, as in Bright's, pernicious anemia, intestinal toxemia, chronic dysentery, scurvy or any cachexia. The solid elements of the blood are here decreased, the column of blood in the vessels losing its "body," permitting a backward flow, or at least inhibiting the forward flow and putting increased work on the heart; it, in turn, being illy nourished by the poor quality and quantity of blood supplied, now acts less strongly, diminishing the *vis a tergo* and the column of blood still further stagnates, increasing the ankle edema. The tonus of the capillaries, being also lessened, adds to the condition, permitting a transudation of serum.

The skin in a *transudate* is cold, symmetrically swollen, pale, shiny and smooth, pitting on pressure and slowly resuming its former shape, or showing marks of clothing, shoes, etc., and painful only from the distention of the tissues. If the tissues are greatly distended for a considerable time there may be a rupture of the epithelium, permitting oozing of beads of clear fluid, not containing blood.

The skin in an *exudate* is hot, non-symmetrical, red, pitting on pressure which quickly disappears after the pressure is removed and constantly painful,—throbbing in character, and the skin breaks only when the abscess points, the exudate being constantly mixed with blood.

Edema of the skin, in contradistinction to a bulging, is important, in that it tells us that the fluid contents that before were non-septic, are now septic. Thus, in pleurisy with effusion there is bulging, but in empyema there is bulging *and* edema; in hydronephrosis there is bulging, but in abscess of the kidney there is bulging *and* edema; as also in an enlarged liver there is bulging but when this enlargement is due to an abscess of that viscus there is also edema of the chest wall.

Edema of the neck, including the upper thorax, or of the arm, also including the upper thorax, may be caused by aneurism or mediastinal

* Read before the Northwest Medical Society of Philadelphia, December, 1903.

growths, being gradual in onset and permanent in duration. Hydrothorax, when local, may be due to these causes, or to an enlarged right auricle pressing on the vena cava. Bilateral hydrothorax is always a part of a general dropsy. As a symptom, dropsy must always be given its full importance, for diagnosis, prognosis and treatment. It must always be considered as a pathological condition, and one which will not right itself without proper medical or surgical attention.

As a general rule, this triad can be accepted: (1) Initial dropsy of Bright's appears as edema under the lower eyelids, seen upon arising in the morning, disappearing by night; (2) in valvular heart disease, myocarditis, lung or blood conditions its first appearance is in the ankles, appearing late in the day and increasing toward night and, (3) hydroperitoneum or ascites is the first dropsy due to failure of compensation in the portal circulation, as in cirrhosis of the liver.

The local edema resulting from a small abscess is slight in importance but becomes increased in value in edema of the chest wall as indicating empyema. A slight local edema of the leg due to a lipoma pressing upon the femoral vein is as nothing compared with the edema occurring as the result of thrombosis on the same site. The onset of slight malleolar edema in emphysema tells us that the conservative development of hypertrophy of the right ventricle which coexisted has now begun to fail and that degenerative changes have advanced to a dangerous degree.

The early edema of valvular heart disease, seen in the ankles indicates also the gradual weakening of the right ventricle,—that stronghold of support in all forms of valvular heart disease,—due to fatty degeneration of the muscle. This may be present for years and not advance much until some sudden strain or intercurrent disease as bronchitis, grip or bronchopneumonia overcomes all the reserve force and the patient dies from sudden pulmonary edema.

Just so soon as we notice commencing ankle edema in heart conditions should we institute measures to check its advance,—nay, more, we should already have used our prophylactic measures to have deferred the onset of this condition.

General dropsy or anasarca, due to Bright's,—acute or chronic—or heart disease, may be recovered from if the patient be in the prime of life, possessed of good in preference to fatty muscle and the poison or factor that has caused the condition be entirely removed. A patient, however, who has once been the subject of general dropsy, regardless of the cause, is in imminent danger of a recurrence and a fatal termination.

When dropsy ensues during the course of any cachectic conditions, as tuberculosis, cancer, chronic malarial cachexia, pernicious anemia, etc., it can be inferred that the patient is nearing the last stage of the disease, the toxemia having produced the high degree of anemia present, and unless he respond to treatment, as in malaria, or have a remission in the condition as is seen in pernicious anemia, the end is not far off.

Edema of a part, after fracture or operation, is a sure indication of need of attention on our part to establish the return circulation or to remove some cause of the obstruction that is present, and this is usually best done by massage and electricity. Hydrothorax, or a pleuritic effusion, even if only moderate, must be constantly treated, medically or surgically.

This dictum may be given: Dropsy *is* an important symptom and the cause must always be sought for and removed.

So long as the effect is present the cause has not been removed and it demands intervention for the reason that the cause will become progressively active and the patient die, directly or indirectly, as the result of our lack of appreciation of this early warning. "A stitch in time saves nine."

MEDICAL PROGRESS.

MEDICINE.

Immunization against Tuberculosis.—Since the cure of tuberculosis by means of bacterial products is still a dream of the future, several attempts have been made to immunize at an early age and a great future was promised for Behring's plan of feeding infants with the milk of cows which had been treated with germs of human tuberculosis. The weak point of the method, however, lies in the fact that the milk must be employed uncooked so that the addition of formalin as preservative will be necessary. More recently Friedman has discovered that the germ causing tuberculosis in the turtle is very similar to the human germ, but absolutely innocuous even to small mammals. The injection of a large amount causes a slight febrile reaction but the animals increase in weight and if killed after months, are free from tubercles. If human bacilli are injected later, the animals remain well. Inversely, turtles may be immunized in the same way with the germs of mammals. The experiments of Moeller are based upon the same principle. According to A. Gottstein (Therap. Monatshefte, Feb., 1904) practical results are more liable to follow the method of Friedman than that of Behring.

The Relations between the Activity of Skin and Kidneys.—The value of diaphoretic treatment in diseases of the kidney has been made the subject of experiment by E. Bendix (Deut. med. Woch., Feb. 18, 1904). He found it impossible to influence the normal freezing point of blood by the most energetic sweating procedures. It was also found that by withdrawing the water, no thickening resulted, nor did any reduction in the molecular concentration take place by the elimination in the sweat of substances dissolved in it. Both normal animals and those with kidney affections showed the same results. Observations of a similar character were also made on patients with nephritis who were treated by diaphoresis and venesection and the results were about the same as those seen in animals. When the freezing point was normal, no changes were noted after diaphoretic measures had been instituted. When the freezing point of the blood was low, however, as in chronic nephritis, the sweating raised the freezing point to almost the normal figures. The author suggests as an explanation that reserve supplies of water must be stored in the body which serve to wash out solid materials in case of necessity. In acute uremia particularly, it was found that more solid substances

were eliminated in the sweat under these circumstances than when the freezing point of the blood was about near the normal. The work shows the advisability of energetic sweating procedures in renal insufficiency as a means of restoring the freezing point of the blood to the normal figures.

The Effect of Mountain and Sea Climate on Man.—A study of this subject has been made by A. Lowy (Deut. med. Woch., Feb. 4, 1904), who finds that the test of the electrical conditions give the same results in each and the effects on the metabolism of the body are approximately the same. In high altitudes the rarity of the air is probably a minor factor, the benefits being mainly the result of the purity of the air, its constant motion and the abrupt changes from warm to cold. All of these, however, may be found at the seashore. The indications for either one or the other should be carefully examined. Where overexcitement or overstimulation is already present the patient should not be sent either to the seashore or the mountains. These places are only for those who are possessed of a reserve energy. It is not definitely known whether the climate at the seashore has the same effect on the blood as that of the mountains. He believes in the possibility, but thinks that further research is necessary to elaborate the details.

Treatment of Pyloric Stenosis with Thiosinamine.—A case in which this drug was used as a last resort, when operation had been refused, is reported by A. Hartz (Deut. med. Woch., Feb. 25, 1904). The patient, a man of fifty-six years, had been suffering from a benign stenosis of the pyloris for thirteen years. One-half a Pravaz syringeful (=½ dr.?) of a 15-per-cent. solution of thiosinamine in alcohol was injected into the back. The symptoms began to improve and in about three months, after the thirteenth injection, the man was eating ordinary food without inconvenience. During five months he was given twenty-three injections, and was apparently cured. The reaction to the drug was marked by headache and depression in only a few instances during the early treatment. Later no unpleasant reaction followed.

Olive Oil in the Treatment of Chronic Dysentery.—The success of this treatment in chronic gall-stone disease, led to its employment in chronic dysentery and enterocolitis of tropical origin, by H. H. Rutherford (Am. Med., March 12, 1904). He bases his suggestion on the analogy of these two conditions, which may seem far-fetched, but on closer consideration it is found that in chronic gall-stone disease there is frequently a hypertrophy of the liver, while in chronic dysentery there is usually a hyperemia or atrophy of the same organ. Other pathological conditions common to both diseases are also present and are due to practically the same set of causes, gastro-intestinal fermentation and absorption of the putrefaction products in the liver. About 75 cases of intractable tropical dysentery were treated about as follows: The olive oil must be pure and the author prefers that produced with especial care in California. During the first period the patient is given 30 c.c. of oil t.i.d., which is increased to 60 c.c. q.i.d. at the end of the first six days. At first nothing but milk is given, followed later by scraped beef and eggs. During the second period 90 c.c. is given three times daily, until convalescence is established and the patient regains his full weight, which may take from one to two months. During the third period the patient is allowed to get up, restored to a full diet and the oil is gradually decreased until recurrences are no longer liable. The oil may best be given at first with equal quantities of hot milk on an empty stomach about an hour before meals.

SURGERY.

Movable Kidney.—The present practice, in this condition, is not to interfere until compelled to do so by torsion of the pedicle, or some serious pathological condition. While it may be conceded that only a small percentage of patients suffering from movable kidney have obstruction of the ureter, necessitating an operation for relief, Rufus B. Hall (Am. Jour. of Obst., Jan., 1904) believes that quite a large proportion develop hydro- or pyonephrosis, and in a few, complete obstruction. Many of these cases suffer more or less discomfort in the region of the displaced kidney. The pain, which is of a burning, dragging character, is not severe enough to necessitate an anodyne, yet is a source of great discomfort and annoyance. The pain is often constant so long as the patient is in the upright position, but is very frequently relieved by a recumbent position. Fixation gives these patients relief. The author is of the opinion that these cases should be operated upon before a hydronephrosis may develop, as the gradually increasing curvature of the ureter with its obstruction has a marked effect upon the excretory function of the kidney and may even eventually produce atrophy and cystic degeneration. The urine being unable to escape, it distends the pelvis and calices, causing destruction of the tubules and the Malpighian tufts, and terminates in a cyst, the walls of which are composed of the pelvis and the capsule of the kidney. During the acute attacks, the examination of the urine will reveal more or less pus present; but this will almost entirely disappear three or four days after the attack has subsided. Thus examination of the urine between attacks may cause a faulty diagnosis. The operation of relief of this condition, is almost devoid of danger; and, if it is performed before serious pathological changes have taken place in the organ, relief is immediate and permanent.

A Complicated Case.—A rare and interesting case is reported by T. L. Coley (Medicine, March, 1904), of which the chief features are as follows: The patient, a man of thirty-three years, suffered from a stricture of the cardiac end of the esophagus below the diaphragm. This was the result of a corrosive esophagitis of a phlegmonous type and led to the formation of a subdiaphragmatic abscess. This communicated subsequently with the left pleura, producing an extensive empyema, which was loculated and separated the lobes of the lung. There was finally a terminal purulent peritonitis. The range of temperature and the result of the leucocyte count were atypical, which may be explained as the result of two processes,—the profound toxemia and the prolonged starvation from which the patient suffered. A number of cases have been reported of abscess following an infection from the esophagus, but the author believes that this is the only case where a subdiaphragmatic abscess was formed which subsequently ruptured into the pleura and also caused in addition a purulent peritonitis. The infection of the pleura seemed to have taken place through the lymphatics rather than to a rupture through the diaphragm, for the classical symptoms of this condition, sudden cough, extremely rapid respiration, profuse expectoration and collapse, were all wanting and the autopsy did not reveal the cause of the extension.

Substitute for Rubber Gloves.—An interesting method, which has been put to the test of practical experience, is suggested by J. B. Murphy (Jour. Am. Med. Ass'n, March 19, 1904). He has found that a solution of gutta percha in benzine or acetone meets all the requirements of rubber gloves or the adhesive rubber dam. A solution in benzine (4 per cent.) is best for the hands and the author's technic is as follows: The hands are first scrubbed with green soap

and hot water for five to seven minutes, then washed for three minutes in alcohol, after they are thoroughly dried the rubber solution is poured on and allowed to dry without rubbing after the entire surface has been covered. The latter takes about two to three minutes and then the hands may be scrubbed in soap and water between operations, or washed with any of the antiseptic solutions. The coating will wear off the finger tips if the operations are many or prolonged, when another application may be made. The abdomen may be similarly covered before operation, but the acetone solution is preferred, as it dries in a few seconds. Murphy states that the advantages of this method are evident. There is no perspiration from the coated surface and where it wears off there is no accumulation of epithelium or secretion beneath. It is entirely impermeable and can be readily removed by washing the hands in benzine, the skin being unaffected and remaining soft and smooth.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Agglutination Phenomena of the Staphylococci.—A contribution to this subject has lately been made by KLOPSTOCK and BOCKENHEIMER (Deut. Arch. f. klin. Chir., Vol. 72, No. 2), which is of considerable theoretical and practical value. They have attempted to show that by means of agglutination methods it may be possible to differentiate among the large number of staphylococci occurring in the air, the normal skin and healthy mucous membranes, those of a saprophytic from those of a pathogenic nature, and the conditions which may influence the production of either class. By means of cultural and immunization experiments they found that a serum derived from pathogenic cocci agglutinates not only the homologous variety but also the larger number of the other pathogenic varieties. Pathogenic staphylococci which are agglutinated by a specific serum only slightly more than by the normal serum of the same animal, are able to produce a serum which shows marked agglutinating properties not only toward the same, but also toward other varieties of pathogenic staphylococci. Saprophytic cocci are not agglutinated by a serum which is derived from pathogenic staphylococci. A serum may be produced from saprophytic staphylococci which will agglutinate other saprophytic but never pathogenic varieties when well diluted. There are, moreover, certain saprophytic staphylococci, from which it is impossible to produce a serum with agglutinating properties. The authors believe that these agglutination tests form a practical means of differentiating the pathogenic from the saprophytic staphylococci. As regards the formation of hemolysins, it was also found that only those varieties of cocci were capable of producing hemolysins which had been determined by the agglutination tests to be pathogenic in character.

Observations on Human Bile.—While the bile of animals has been very carefully investigated, few articles on human bile in various diseases, may be found in literature. T. KIMURA (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 3 and 4) states that very marked variations in physical and chemical properties may occur. Thus in tuberculosis the amounts of pigment are very often low, while in congestive conditions, especially in diseases of the heart, a much darker fluid is excreted, probably since more red blood cells are disintegrated in the liver. The specific gravity varies between 1.012 and 1.04, the dry residue between 2.68 and 20.63 per cent, and the viscosity between 1.46 and 58.24. In obstructions in the common duct, the amount of pigment, dry residue and viscosity are considerably increased. Urobilinogen is found generally, urobilin less often, but in the newly-born, in marked diarrhea and where no communication exists between the biliary and intestinal systems, both substances are absent, since they are most likely of enteric origin. The normal feces also contain urobilinogen except in obstruction of the common duct.

Serodiagnosis for Identifying Blood.—The serodiagnostic method for identifying blood of man and different animals must be regarded as a most valuable procedure in legal medicine, provided the examiner is thoroughly versed in the technic. To obtain a serum which precipitates human blood G. HAUSER (Münch med. Woch., Feb. 16, 1904) first injected placental and retroplacental blood into rabbits, but later obtained equally good results with the serum of cadavers, introduced intraperitoneally or subcutaneously twice a week in amounts of 15 to 20 c.cm. Even the serum of septic bodies remained sterile and was well borne by animals, but the blood from tuberculous cases should be avoided. If the injections are repeated too rapidly, a very potent serum will be obtained, but this will also precipitate the blood of other species; it is thus advisable to test each serum with different varieties of blood kept in stock. In legal cases a serum should be employed which, if added to human blood in a proportion of 1:30, gives rise to a turbidity, soon to be followed by a flocculent precipitate, if kept in the incubator for half an hour. Where only small quantities of blood are available for examination, capillary tubes may be used. The blood-extract is first allowed to flow in by capillary attraction, then the necessary amount of serum is sucked in and the tube sealed and set aside. If the test is positive, a ring-shaped turbidity will appear at the line of contact of the two fluids which will gradually extend along the tube. Thus performed the test is much more accurate than with the older methods. Serodiagnosis is not always necessary, for occasionally a simple microscopical examination will suffice to determine that a blood is not human, as where only nucleated red cells are found.

Notes on Blood-coagulation.—There is no longer any doubt that the blood platelets play a most important part in the coagulation of blood, for P. MORAWITZ (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 3 and 4) has succeeded in isolating them from the other elements in the blood and has been able to determine that they contain a large amount of thrombogen. The other cells lack this substance, so that there is every reason to believe that the platelets are not derived from the disintegration of erythrocytes or leucocytes, but form an independent group. A small amount of thrombokinase may also be detected, but the bulk of this substance comes from the leucocytes. In extravascular clotting, small nodules often form along the walls of the vessel just prior to clotting; these consist almost entirely of platelets. The number of platelets in the blood also seems to stand in some relation to the rapidity of coagulation. Further experiments are in progress to determine if thrombogen and thrombokinase may be employed therapeutically, perhaps in conjunction with adrenalin in severe hemorrhage. One great difficulty lies in the fact that kinase is an extremely labile body, but a permanent preparation may be obtained by evaporating and drying in vacuum. By dissolving in water shortly before use, a very potent solution results.

Vincent's Angina.—The peculiar membrane and ulcerations in the throat characteristic of Vincent's angina, seem to be due to a long, spindle-shaped bacillus with slight mobility and numerous lighter areas in its body, and an actively motile spirillum, since both generally occur in pure culture upon the surface. The bacillus has also been found in other lesions, as in a sublingual abscess, submaxillary adenitis, in the pus of

empyema and in hospital gangrene. It may even be found in the mouth in conditions of perfect health. Clinically the disease is very mild, with only slight fever and moderate swelling of the glands, but there are cases on record complicated by polymorphous exanthemata, synovial effusions and pleuritis, probably due to secondary infection. Not rarely a stomatitis goes hand in hand with the angina. Locally two forms may be recognized: in one, a tonsil is covered by a grayish-white membrane which leaves a superficial raw surface when cast off; in the second the membrane is thinner but the ulceration deeper. In the great majority of cases the affection is unilateral and smoking seems to be an important etiological factor. The differential diagnosis is occasionally difficult, since the ulcers may closely simulate diphtheria or primary or secondary syphilis. What complicates matters, is that the germs in question may occasionally grow upon these ulcerations as harmless saprophytes, but they are then generally mixed with other organisms. All attempts at cultivation have hitherto been unsuccessful, though if contaminated with other bacteria, it is sometimes possible to obtain a growth on serum media for two generations. A. Gross (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 3 and 4) has had occasion to examine the infiltrated tissues microscopically; he found the inflammation fibrinous in character, with many bacilli, almost in pure culture in the superficial layers and a much smaller number in the deeper tissues. Spirilla were also found but are of less importance, since abundant on healthy mucous membrane. Though the chain of evidence is not complete, there is every reason to believe that the bacilli are the cause of the ulcers.

NEUROLOGY AND PSYCHIATRY.

Micropsia and Macropsia.—The word "micropsia," according to O. Veraguth (Deut. Zeitsch. f. Nervenheilk., Nov. 10, 1903) signifies a qualitative disturbance of sight, in which the individual sees things lying in his field of vision smaller or farther removed than they really are. Macropsia or megalopsia is the opposite condition. Both phenomena appear in various diseases of the nervous system. Five cases were reported by Charcot; they were tabes complicated with hysteria, traumatic hysteroneurasthenia, tabes and hysteria in which there was monocular micropsia and polyopsia, hysterical degeneration, and a case marked by hysterical crises. Various authors have recognized these conditions among the aura of epilepsy. The author reports four cases as follows: (1) In a case of undoubted epilepsy, macropsia occurred as a phenomenon of petit mal. (2) A case, probably of nuclear origin, of metasyphilitic type or associated with nutritive disturbances in the medulla as the result of arteriosclerosis, presented micro- and macropsia associated with dyschromatopsia. (3) A case of typical hysteria presented a monocular micropsia and dyschromatopsia and followed by temporary amblyopia. (4) A patient in whom an occasional micropia associated with abnormal sensations of movement appeared, was an example of a neurosis of exhaustion with hereditary taint. In concluding, the author finds that micropsia and macropsia occur in hysteria, epileptic aura, petit mal, psychoses exhaustion of nervous energy (neurasthenia), tic convulsif and probably in organic diseases of the nuclei of the motor nerves of the eyeball. These symptoms are of no pathognomonic value. They may be isolated or associated with other disturbances of vision and may be localized in one eye.

Abdominal Symptom-complex in Diseases of the Lower Part of the Dorsal Cord.—The increasing importance of abdominal pain as a significant symptom in local and remote pathological conditions, imparts a peculiar value to the observations on the above subject by H. Oppenheim (Deut. Zeitsch. f. Nervenheilk., Nov. 10, 1903). Diseases of the lower part of the dorsal cord between the levels of the eighth and twelfth dorsal roots produce a charactertistic complex of root and cord symptoms. This is particularly typical in affections that gradually develop and that encroach upon the cord from the outside, as in the case of neoplasms. In these cases there are found unilateral pain following the distribution of the nerve-roots, diminished or totally absent reflexes in the domain of the abdominal musculature of the corresponding side, degenerative paresis of the muscles, paresthesia or anesthesia in the areas of the distribution of the eighth and ninth, or tenth and eleventh or of all four roots. In Brown-Séquard's symptom-complex pain and disturbances of reflexes precede the other symptoms, but this order is not a constant one. In most cases of this disease thermo-anesthesia of the opposite side is the first manifestation, still it is sometimes preceded by homolateral spasm or paralysis. Also characteristic is the transition from the hemilateral to the bilateral symptom-complex (girdle-sensation) bilateral areflexia, anesthesia paralysis, meteorism, paraplegia, etc. One must be cautious in making the diagnosis of a local condition from these symptoms. Simple or spastic non-atrophic paralysis of the abdominal muscles may be produced by conditions higher up in the cord. Moreover, in the healthy and in cases of intra-abdominal disease, there may sometimes be found differences in bone and muscular strength between both sides of the abdomen. The abdominal reflexes, moreover, are inconstant ones, their failure even not necessarily indicating a pathological condition. These reflexes are frequently affected in cases of intercosto-abdominal neuralgia and neuralgias of the viscera.

Case of Hystero-epileptic Chorea.—For more than a century articular rheumatism has been held to be a cause of chorea minor, says Giovanni Morelli (Gazz. degli osped., Feb. 21, 1904). In 1887 various forms of streptococci were found in three cases of polyarticular rheumatism. Many experimentors have found proof of an infection. Since then many writers have claimed the infective origin of chorea, and articular rheumatism accompanying or preceding chorea is generally admitted. Sydenham's chorea has been observed following many other infectious diseases not associated with rheumatism. Chorea develops suddenly after violent emotions, trauma, syphilis and in cerebral lesions. It is not rare in pregnancy. Rheumatism may be only one of many causes. Heredity is of the greatest importance. Every age of life has its own peculiar diseases. In infancy and the period of early development, eclampsia, epilepsy, infantile paralysis, chorea, and certain other nervous diseases are seen. This is due to the physiology of the brain, which from the period of birth to puberty is changing and in a condition rendering it liable to various disturbances. The writer reports a case of a boy suffering from chorea with heredity, age and previous rheumatic infection, the muscular contractions affecting the face, neck, tongue, limbs, pharynx and heart. Muscular fatigue did not appear as in ordinary chorea. Abolition of the pharyngeal reflex, cutaneous hyperesthesia and dermographia suggested hysteria; in addition increased reflexes, painful areas in abdomen and back, easy suggestibility, and the quieting of the tremor under the influence of a command still further demonstrated hysteria. In addition to these symptoms, a form of epilepsy was present, of the ambulatory type, automatism, amnesia, and occasional convulsions. Mentally the patient was depressed, and at times suicidal. The

conclusion drawn from a study of this case is that a marked affinity exists between epilepsy, hysteria and chorea.

A Few Remarks upon Stuttering.—Although stammering has been regarded as almost always a manifestation of some neurosis, yet, according to O. Maas (Deut. Zeitsch. f. Nervenheilk., Nov. 10, 1903) in a greater proportion of cases than yet realized, it is in all probability to be attributed to local organic changes in the central nervous system and even in the peripheral nerves. The symptoms of organic stuttering are not yet well understood. Possibly deviation of the tongue will turn out to be one, and possibly symptoms will be found in the area of distribution of the facial nerve.

PHYSIOLOGY.

A Study of the Antagonistic Action of Poisons.—A contribution to this subject has been made by T. Sollman (Am. Jour. of Physiol., Feb. 1, 1904) in studying the simultaneous action of pilocarpine and atropine in the developing embryos of the sea-urchin and starfish. A. P. Matthews had found that the development of the latter is hastened by pilocarpine and retarded by atropine. The advantage of studying the effect of the simultaneous action of the two drugs in these simple organisms in which the effect is a plain one and can be easily observed, is apparent. The author found that while small doses of pilocarpine hasten the developments of the embryos, larger doses or a prolongation of the action, produce the opposite result. Small doses of atropine have no effect, but larger doses hinder development. When both drugs are used, there may be antagonism or synergism, according to the conditions; but the depressant action always tends to predominate. The observed resultant is always below the mathematical average. Even with the best antagonism, both poisons are producing their action, as shown, for instance, by the greater liability of the protoplasm to depression. Stimulation can be readily and completely removed by very small doses of a depressant (even by doses which are inactive when used alone). Depression is lessened by only a limited range of doses of the stimulant. Its removal is in no case complete. This gives to stimulation a limited but distinct usefulness. The optimum dose of the stimulant is smaller when the embryos are depressed than when they are normal. Larger doses are synergistic to the depressant, and hence harmful. The dose of the stimulant must therefore be chosen smaller, when depression exists, than in normal specimens.

The Action of Radium Rays.—A series of chemico-physiological experiments were performed by G. Schwarz (Pflüger's Archiv, Dec. 17, 1903) on hen's eggs, with the view of elucidating some of the important problems that have arisen in the therapeutic application of the Becquerel rays. In 1900 Walkhoff observed certain peculiar changes in the skin caused by radio-active substances, which are analogous to the dermatitis produced by the Roentgen rays. Becquerel noticed in his own case, that carrying a highly active radium preparation in his vest-pocket produced a deep and persistent inflammation in the skin beneath, which spread and terminated in a deep-seated abscess. The repetition of this observation by others has led to the term "radiogenic inflammation." The therapeutic application of this radio-active substance rivals that of the Roentgen rays in tuberculous and carcinomatous disease of the skin. No explanation of the effect of the former on normal and pathological tissues has been forthcoming, except that it consists of a primary cellular degeneration with secondary reactive inflammation. This peculiar necrobiotic change in the cells following an exposure to the rays sometimes of not more than five minutes, not immediately, but only after a latent period of several days, has awakened investigation. Gresel observed that paper in which radium has been kept becomes brown and brittle, and ascribed these changes to molecular attraction which he assumes by analogy to take place also in living tissues. These and other researches stimulated the author to study the physiologico-chemical effects of radium rays, and for this purpose he availed himself of that veritable store-house of chemical and physiological facts, the hen's egg. Exposure of the latter to the influence of radium rays for 44 to 144 hours produced, in the sense of a dry distillation, a decomposition of the albuminoids. No marked changes are produced in native albumin. The organic pigment, lutein, a lipochrom contained in the yolk is decolorized. There is an important electric action in the lecithin, which is decomposed. This substance, allied to the fats, contains nitrogen in the group cholin, which is bound to the phosphoric acid constituent, and by virtue of its nitrogenous content is revealed its derivation from albumin. Its decomposition takes place with the addition of water and results in the formation of stearic acid, glycero-phosphoric acid and cholin, which last splits off trimethylamin. According to Verworn, lecithin is a splitting-product of albumin, like the nucleins, with which it is associated. It is a necessary constituent of all living cells, being united in some unknown way with the albumin of the protoplasm. According to Hoppe-Seyler, the presence of lecithin in large quantity in developing cells or in those capable of development, associated with cholesterin in the yolk of the egg, spermatozoa, colorless blood-corpuscles, rapidly-growing pathological growths and in many seeds and rapidly-growing parts of plants, indicates that lecithin bears a certain relationship to the metabolic events of cellular development. The influence of radium in decomposing lecithin would seem to explain the peculiar effects wrought by this substance in the cutaneous and adjacent tissues. The continual exfoliation and regeneration of the epidermis requires the presence of a considerable quantity of lecithin in accordance with the rule that this substance is found in largest amounts in those tissues undergoing active development. The necrotic and inflammatory changes in the skin produced by radium can therefore be explained upon the basis of the loss of lecithin through decomposition. The action of the Roentgen rays in retarding or arresting the growth of carcinoma and lupus of the skin would therefore be accounted for by this fact namely, that the lecithin which is abundant in all neoplasms and evidently plays an important rôle in their growth and development, is destroyed by prolonged exposure to the influence of these radiations.

The Effect of Various Essences on the Cerebral Circulation.—In experimenting with the essence of absinthe and with the essential oils of anis, citron, melissa and canella, A. D'Ormea (Arch. Ital. de Biol., Nov. 21, 1903) found that when injected into the circulation in a dose not capable of producing convulsions, these substances have the following effects on the circulation of the brain: A more or less rapid and durable depression of the circulation in the circle of Willis, associated with a rise of the subarachnoid pressure. Anis and citron produce the mildest effects while melissa and canella act more powerfully and sometimes even in small doses produce convulsive seizures. Camphor produces a still stronger effect, which may include a general convulsion frequently resembling in form and intensity, that caused by essence of absinthe.

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DIRECT HEART MASSAGE.

The recent announcement by Dr. W. W. Keen, of Philadelphia, that direct massage of the heart, after an opening has been made through the diaphragm, might prove life saving in certain serious cases of apparently fatal collapse in abdominal operations when the patient is under an anesthetic will not prove so surprising to the medical profession generally, as it apparently was to the public, from the space given it by the newspapers.

For some time it has been understood that direct heart massage might accomplish a very definite life saving purpose in these extremely annoying and unfortunate cases. In recent years it has been the custom of Prof. Richet, of the University of Paris, to demonstrate in his course on physiology the possibility of apparently restoring dogs to life by the method of exposing their hearts and intermittently squeezing them with the hand. Animals that had been drowned and were to all intents and purposes dead are thus brought back to life. If the heart massage were not instituted in these cases the animals would never breathe again. As it is, though the heart-beat and respiration have ceased and the animals have been for over three minutes under water, after a time the heart begins to beat again, under the irritation of the massage and with the aid of artificial respiration; complete restoration to life follows.

Even before Professor Richet's experiments and demonstrations there had been more than a suspicion that irritation of the heart muscle itself might lead to revival after apparent death. Certain of the measures used in the production of artificial respiration and recommended for application after persons have been rescued from the water in an unconscious condition, seem to take advantage of this principle. It was recommended, for instance, that firm pressure should be made over the thorax anteriorly with intervals of relaxation. In asphyxiated newborn children intermittent pressure upon the thorax has always been considered an important part of revival methods. Even the ordinary artificial respiration, as conducted in the laboratory under forced air pressure, on an intubated animal, has something of this same principle in it. The alternate expansion and contraction of the thorax, under forced air pressure, acts as an irritant to the heart by alternately pressing the lungs against it, and then allowing them to contract away from it.

From this, of course, to actual incision of the diaphragm and the taking of the heart of the human being in the hand for purposes of massage is a long step. It is, however, one that has been gradually led up to, as have most of the practical discoveries in medicine and surgery, and there seems no doubt of its entire justification under the serious circumstances in which it is recommended. It is not attempted until the patient has been for at least five minutes without active respiration. To all intents and purposes such a patient is dead and the added risk of entry to the thorax through the diaphragm is therefore completely justified. That such a procedure may be successful, Dr. Keen's own reported case is the best proof. Notwithstanding that more than five minutes had passed since the heart had ceased to beat, under massage it resumed its pulsation, and though the patient died about half an hour later, there is no doubt that a new chance for complete recovery had been given, and only for the patient's cachectic condition, the case was one of total laryngectomy for cancer, the new life opportunity thus afforded would not have been in vain.

How long after apparent death such a procedure may be employed with some hope of success it is yet difficult to say. Great encourage-

ment, even after many minutes have passed, is afforded by certain experiments, which were undertaken in order to obtain additional physiological data for the procedure. The hearts of animals after removal from the bodies had been frozen for over two days and yet were made to renew their pulsations or at least make a certain number of spontaneous contractions and relaxations as the result of well-directed massage. It would seem then that this procedure might well find a place in attempts to restore to consciousness those who have been under water for some time, whenever all other methods of resuscitation have failed and the patient is about to be given up for dead.

It has never been absolutely decided how long after the patient has been under water, death is inevitable. In animals five minutes usually sealed their fate until this new procedure added to the means of resuscitation. In human beings occasionally resuscitation has been accomplished by previously accepted methods, even after twenty minutes, though the cases are rare and those of longer immersion with subsequent resuscitation are not well authenticated.

It is perfectly possible that this new method, which has been employed altogether over twenty-five times now and in two of them with such complete success as to restore apparently dead patients to life, may prove a very important addition to modern surgical therapeutics. At best, however, it will have a very limited field of application. It is more the sensation produced by the unusualness of the procedure of actually handling the heart in order to irritate it into renewed contraction than its possible frequent usefulness that brings it so prominently before the public now. It is but the further step in the surgery of the heart that has been developing in recent years from the first successful case of suture of the organ after injury, until now when even serious incised wounds, of the left ventricle particularly, are not likely to prove fatal if the surgeon recognizes the condition and has the courage to treat it by such direct surgical methods as he would apply to any other incised muscle.

"A FLORIDA ENCHANTMENT."

Florida has long been celebrated for her oranges, but if the inhabitants of her rural districts, with their antiquated and bucolic habits, still continue to measure their faith by the traditional Biblical standard, their grains of mustard seed must have increased to even a greater extent than the rest of their tropical fruits. At all events, Mrs. Helen Wilman-Post has been reaping a golden harvest, and might, it seems, have still been making daily bank deposits of large sums had she not, like Bonaparte, met with a Waterloo, and also, like Bonaparte, encountered it in an unexpected manner and from most ignoble hands.

According to the evidence produced at Jacksonville, Mrs. Post was a "healer," not only of large experience, but of even greater promise, for the list of the miracles which she guaranteed to accomplish by her mental treatment comprised the following acts: "To get a man out of jail; make a new set of teeth grow; make a leg grow on a stump from which the lower leg had been amputated; make the hair grow on a bald head; restore the affections of persons who had become estranged, ensure success in speculation, transfer the affections of persons."

Now the wants of the human kind are very much the same the world over, whether they live in an ordinary every day manner, in huts bordering on the sluggish Wilhlacooche river, or if they reside in a Sunday-like, holiday way, in brown stone houses that are washed by the receding tide of the Atlantic, in the "Back Bay" precincts of classic Boston. Moreover, there are not many ordinary beings who would not be assisted by the materialization of some of these promised benefits. While there are very few who unless possessed of a carping and discontented spirit would not have been satisfied with the list as originally given. In order, however, to insure perfect satisfaction to those desirous of obtaining her professional services, Mrs. Post issued a second circular of approved medical "stunts" which was to the first what the dress white tie is to the evening coat of civilization. These were: "To insure the birth of children; to check the undue size of families, and to regulate the sex of future offspring." This having been accomplished, the Florida Enchantress rested from her labors. Her web had been woven. It was of steel wire, copper fastened and clinched, and she did not believe that a fly from any ointment could escape its meshes.

The weeks rolled by, and the money rolled in, bills of large amount, notes of small denomination, but always money. Teeth were reported to be growing in gums long smoothed by age. Convicts were released as their terms expired; delicate rootlets of hair were believed to be germinating in polished scalps, and all went merry as a marriage bell. The offices grew and extended, the

number of clerks who were sending glad tidings of great joy to all manner of men and women, increased, and printed answers to the questions of eager inquirers were now beginning to flood the mails. Then ensued a plethoric golden age, in which unbounded success relaxed the caution that had hitherto kept the machine in motion. It appeared at the trial that Mrs. Post no longer read her mail, but after extracting the enclosed money entrusted the answering of the letters to clerks, who either forwarded printed circulars, couched in glittering generalities or consigned them unacknowledged to the yawning void of waste-paper baskets. The complaints began to increase and multiply, and with the charge of "using the United States Mail to defraud various persons" came the bursting of the South Sea bubble in the sandy dunes of Florida.

There is a moral in all true tales, and the saddest part of the mishap of this modern "Belle Helene" lies in the fact, that she has never recognized the little acorn of discontent from which the great oak of ruin, that gradually overshadowed her prosperity, grew. Nor did she know the wood-woman, who not only would not spare the tree but whose feeble fingers first laid the glittering axe at the roots of her affluent success. Somewhere down in Citrus County, in the interior of the State, there lived a woman, one Mrs. Casey, who not only had been wooed, but according to her "marriage lines" had also been won by the most selectman of the selectmen of her native town. From then on her life seemed marked with success. Endowed with great executive ability, and possessed of a lively interest in the affairs of others, she for years sat at the right hand of her selectman, from whence, according to her neighbors, she came to judge both the quick and the dead. The one weak spot in her heart was for her pet dog, towards which her fancy, after the manner of her sex gently, turned to thoughts of love. The New England spinster of uncertain age may devote herself to her tabby, of an equal uncertain sex, while the up-to-date American girl, since the Spanish war, will waste her sweetness on the unresponsive marmoset and the changeable chameleon, but with the women of the South a yellow dog it has always been, and a yellow dog it will always be 'till suns shall rise and set no more.

Unfortunately Mrs. Casey's particular specimen was either a truant dog that thought his home a cage, or he was possessed of a desire to wander from his own fireside that could not be eradicated. At all events he departed from home and mother on a certain sultry day, and she refusing to rest under the consoling thought that it was better to have loved and lost, started after him in an equally sultry pursuit. Both the woman and the dog became engrossed in the match and were utterly unconscious of the fact that it was taking place between the yellow pine rails of a local freight line until an engine coming round a curve met the lady full and fair in the midst of herself and her career. What appeared in the local papers was merely an announcement of the escape of the dog, coupled with the bald and bare statement, that Mrs. Casey had been "hurt some." The "some" referred to being a compound comminuted fracture of the arm and a loss of the left leg just above the knee. The locomotive was an alien, an imported stranger, but it seems to have done its work thoroughly, as the limb, which was buried with the full rites of the church, proved conclusively that it had not bitten off more than it was perfectly able to chew.

Years passed and the wounds had healed, but Mrs. Casey never smiled again or ceased to repine that in all the things she was not "as other women are." It was not that the taunts of ribald boys, with their scoffing allusions to "peg leg" and "dot and carry one" broke her proud bearing, nor yet her inability to join in the merry dance, but rather a personal sense of a loss of equilibrium, and a constant desire to reestablish, on the old lines, the accustomed meta-centric balance of gravity. She might, like the centurion of old, say to one "come," and to another "go," but as long as she was personally unable to supervise the execution of her commands, the exercise of her almost despotic power found but little favor in her eyes. It was at this critical period that the illusive and flamboyant circular of Mrs. Post fell into the outstretched hands of Mrs. Casey, and the beginning of the end had come. But oh, what rapture; as to love she had it, as to teeth she was indifferent, bald she was not, but how doubly blessed was the "healer" who could make even one leg grow where one had grown before. The farm was mortgaged and the proceeds sent to Jacksonville. Day followed day, and the faith in the efficacy of the cure waxed and waned with the tides and the moon. The instructions were implicitly followed out, but the leg that she had looked for never came.

There is a trite injunction fed to each baby with his mother's milk, in the cattle raising districts of the South, "Never give a bullock sul-

phur or you will repent it," and to this may be added, never feed a "cracker" woman "taffy," or fail to keep a contract with her paid for in advance. For from selectman to selectman the story of Mrs. Casey's wrongs traversed the hummocks and bayous of her native State, and from postmaster to postmaster spread the news of the sinful pulling of her leg. Then came the power and might of an outraged government, with its illegally-used mails, and the career of Mrs. Helen Wilman-Post was at an end.

The interest from a scientific standpoint lies in the fact, that this case directly confutes the allegations of these "Mental Healers" who claim that their failures, in all cases, are due to a want of faith on the part of those treated. For here *was* faith, and faith to spare. Faith that could not only move mountains, but faith that attempted to move Mrs. Casey, who was equally as massive, and perhaps a little more inert.

THE LONG BACILLUS OF THE STOMACH CONTENTS.

The long bacillus, which is so constantly found in the stomach contents in cases of carcinoma, has attracted the attention of many investigators. It was first discovered by De Bary, Jr., who named the organism *Bacillus geniculatus,* but failed to attach any special significance to its presence. Minkowski pointed out its predominance in bacillus fermentation associated with extensive production of lactic and butyric acids. Boas then drew attention to the importance of the long bacilli in the differential diagnosis of cancer of the stomach, and showed that their demonstration may be regarded as collateral evidence of the presence of lactic acid. The first description in greater detail came from Oppler. Since then it has been spoken of as the Boas-Oppler bacillus. The clinical significance of this organism, as first formulated by Boas, has now been definitely established. Instances, it is true, have been recorded in which the bacillus has been encountered in non-cancerous affections of the stomach, but such occurrences are after all rare and do not detract materially from their diagnostic importance. This is practically the same as that attaching to the presence of lactic acid.

The question why these organisms should occur so plentifully in carcinomatous stomachs has long been a subject of speculation. Possibilities which suggested themselves were (*a*) the anacidity of the gastric juice with simultaneous stagnation of the stomach contents; (*b*) the irregular contours and depressions of the surface of the tumors, and (*c*) the admixture of blood to the stomach contents. Each one of these factors no doubt is of moment.

A perfectly satisfactory explanation of the reasons why in advanced cases of the disease the long bacilli control the situation to the exclusion of almost all other forms has, however, not been furnished until recently. Sandberg's researches, which appeared a short while ago, have thrown new light on this problem. Using one per cent. glucose agar this investigator succeeded in isolating two types of the organism in question from carcinomatous stomach contents. One of these was represented by short bacilli, the other by the typical long bacilli. Their identity was proven by the demonstration that one type could artificially be caused to pass over into the second type. The short type the author regards as the primary form. Associated with these two types carcinomatous stomach contents may contain one or more other forms of lactic acid producing bacilli, and it is interesting to note that on artificial media these forms develop much more rapidly and readily than the long bacilli, although in the stomach contents they are far less numerous. Their acid production, corresponding to the greater activity of their growth on artificial media is also much greater. These peculiar results find their explanation in the fact that while the acid production of the common lactic acid bacillus is at first much more active than in the case of the long bacillus its growth is arrested already by a comparatively low percentage of lactic acid. The growth of the long bacillus, on the other hand, is thus rendered more vigorous. This was shown in a series of ingeniously arranged experiments. Sandberg prepared an artificial culture medium, which represented the patient's own gastric juice, sterilized by means of chloroform, to which glucose was further added. Tubes of this medium were then inoculated with the two types of the long bacillus and the common lactic acid producers which had previously been isolated. In one experiment, in which the medium contained 1.9-1,000 of lactic acid, it was found that the two types of the long bacillus had grown very actively, while in the remaining tubes no growth had taken place. In the presence of 3-1,000 of lactic acid the long bacillus did not grow so readily as in the first experiment, while the other tubes again remained sterile. In a third experiment in which the stomach contents contained 1.4-1,000 no growth even of the long bacillus occurred.

The appearance of the long bacillus in almost pure culture, in cases of carcinoma, thus finds its explanation in the resistance which the organism offers to lactic acid in concentrations, which will arrest the growth of the common lactic acid producers. These latter probably furnish the primary grade of acidity, which is especially favorable to the growth of the long bacilli.

Opposed to the validity of the above explanation is apparently the fact that isolated cases of carcinoma have been observed in which the long bacillus was present even though lactic acid could not be demonstrated at the time. In such cases it is possible that the bacteria may have developed in nooks and crevices of the carcinomatous portion of the stomach, where conditions favorable to their growth may have been present, even though the gastric contents as a whole may not have proved a suitable medium. This factor, as we have pointed out, has already been suggested as of moment in the explanation of the predominence of the long bacillus in carcinomatous stomachs. That such a condition should favor the occurrence of fermentative processes even in the absence of stagnation of the stomach contents is scarcely to be doubted, and probably also accounts for the frequency with which certain protozoa (*Trichomonas intestinalis, Megastoma entericum*, etc.) are simultaneously encountered.

MARAGLIANO'S VACCINATION.

The name of Jenner has become synonymous with savior. In those days when medical textbooks described smallpox as an inherent humor which must out in every man, and where it was the prevailing opinion that as no one could escape it, it was better to have it and be done with it, in those days we can see that it must have been hard indeed to have established the use of such an unprecedented custom as vaccination.

Until the last few years of the nineteenth century, the popular view of tuberculosis has been almost as fatalistic. But from Koch to Maragliano there has been an uninterrupted procession of investigators who have marched forward with careful haste; and have carried the flag of conquest almost into the citadel of death.

If tuberculosis can be as completely controlled as smallpox has been, the greatest curse of disease will be lifted from the land. In the original contribution of this week, prepared by Prof. Edoardo Maragliano, of Genoa, Italy, and read at the Henry Phipps Institute on last Monday night, we see that it is possible to produce a specific serumtherapy for tuberculosis, and that there is good reason to hope for vaccination in man as a preventive of the spread of the disease.

It all depends upon the enterprise with which Prof. Maragliano's methods are tested upon a large scale, whether it is a half-century or but a few short years before the value of his and his colleagues' work is felt all over the civilized world.

The energy and wisdom shown in the adoption of antitoxin of diphtheria has illustrated what can be done, when laboratories, health departments and great business institutions work together on an approved scientific basis. The bacilli of diphtheria work with such lightning rapidity that the rescue from the disease is almost spectacular; and the public has needed but little coercion to adopt the treatment. Also the onslaught of the disease is so decisive that there is no time to waver and doubt. But the slow, insidious progress of tuberculosis and the tendency to delay diagnosis until the serumtherapy will prove of no avail will combine to make the public doubt the efficacy as well as the necessity of such treatment as well as of vaccination.

Dr. Maragliano begs for a wide test, which implies years of work, but such work is just the kind that the generous founder of the Henry Phipps Institute had in mind. Means, equipment, workers, leisure, and a great desire to bring things to pass, are all necessary if one would establish the machinery that will make a scientific theory lift a part of the world's burden. These the Institute possesses as no other in the world. And it would seem as though it were best fitted to carry out the charge.

We feel that if the workers of the Henry Phipps Institute satisfy themselves that these methods are practical for application on a large scale, it will not be too much to expect that they will indicate the lines by which the serum shall be manufactured, and distributed, and also undertake the propaganda of the treatment with the systematic cooperation of health departments.

Bacteriology of Conjunctivitis of Measles.—In the majority of cases of measles examined by E. Schottelius (Münch. med. Woch., March 1, 1904) the *Staphylococcus aureus* was found in the conjunctival secretion, less frequently the other varieties of staphylococci and in especially severe cases, streptococci. These did not correspond exactly to the ordinary pyogenic streptococci, as they did not grow below 30° C. and behaved somewhat differently toward aniline dyes. When examined in the dried state, they often appeared as diplococci, but the hanging drop showed distinct chain formation. The findings point to a possible pyogenic infection as cause of measles.

ECHOES AND NEWS.

NEW YORK.

Hospital Appointments.—The following men from the College of Physicians and Surgeons have secured hospital positions: Bellevue—C. K. Stillman, first place; W. C. Cramp, J. T. Pilcher, J. F. Bowman. Mt. Sinai—A. E. Cohn, Max Taschman, J. J. Meyer, Louis Jacobs, S. Wiener. German Hospital of Brooklyn—B. S. Harris. Bridgeport (Conn.) Hospital—C. H. Sprague.

Civil Service Examinations for the State and County Service.—The State Civil Service Commission announces general examinations to be held April 19, 1904, including physicians in State hospitals and institutions of both regular and homeopathic schools. Applications for these examinations must be made on or before April 14. Full particulars of the examinations and blank applications may be obtained by addressing the Chief Examiner of the Commission at Albany.

Physicians and Surgeons Announcement.—The annual announcement of the College of Physicians and Surgeons has just been issued. It is a pamphlet of sixty-four pages. Two new names appear among the officers of instruction: Dr. Harry McMahon Painter, professor of clinical obstetrics, and Dr. Gorham Bacon, clinical professor of otology. The following new appointments have been made: William K. Simpson, clinical professor of laryngology; Philip H. Hiss, adjunct professor of bacteriology; Eugene Hodenpyl, adjunct professor of pathological anatomy; Francis Carter Wood, adjunct professor of clinical pathology, and Frederick R. Bailey, adjunct professor of normal histology. New courses will be offered in the departments of materia medica, pharmacology and therapeutics, of pediatrics and of physiological chemistry. More extensive work than ever before will be given in pharmacology and therapeutics under the direction of Prof. Christian A. Herter, and considerable attention has already been directed toward the development of a thorough pharmaceutical laboratory, under the care of Drs. Jelliffe and Bastedo. The work in general chemistry, heretofore given under the direction of the Columbia University department of chemistry, in the future will be in the hands of Professor Gies, head of the department of physiological chemistry at the Medical School. Three courses will be offered in general organic, inorganic, and physical chemistry in addition to the regular work in physiological, toxicological, and botanical chemistry.

Hospitals at Their Fullest.—The current issue of *Charities* says that "a census of all the municipal hospitals and the general private hospitals of New York shows that the unusual number of patients has been continued very steadily through the winter, and that the total number of patients in twenty hospitals on March 19 was greater than on January 23. On the former date the total was 5,202, and on the latter 5,390. As the capacity of the hospitals is given as 5,446, there are now, on paper, only fifty-six vacant beds in all the general hospitals of New York. As a matter of fact, the distribution of vacancies makes the condition look much better than at first appears. In the city and metropolitan hospitals, conducted by the Department of Public Charities, there are 200 more patients than the capacity. In Bellevue and allied hospitals, patients and capacity are about even. In the private hospitals there are at least a few vacancies in each, and in some a fair number. The condition in the city and metropolitan hospitals has been held to be the naturally expected result of a very severe winter. These two hospitals are the places of last resort for the sick poor, and the sick poor are more exposed to and suffer more from the rigors of such a winter as the one just passed than any other class. Hence the crowding on the island hospitals. Another factor out of the usual is the fact that for three weeks preceding the date of removal to its new buildings, Mt. Sinai Hospital refused to accept any patients, so that on March 19, when this census was taken, there were only 28 patients left in the old building and none in the new. Undoubtedly this raised the numbers in other hospitals. The average number of patients at Mt. Sinai from January to March was 205 daily. Changes in the children's ward at the Presbyterian Hospital also made a difference, as a part of this ward was temporarily closed in January. It appears, therefore, that conditions now are really worse than in January when there was the most talk and newspaper comment on the congested condition. But the hospitals have met the tax on their resources and, except in the municipal hospitals on the East River islands, are in good shape to deal with the epidemic of grip and pneumonia. It was stated at a number of them that with the real opening up of spring and warm weather the number of patients may be expected very materially to decrease."

New York Academy of Medicine.—The next meeting of the Pediatric Section will be before the whole Academy on April 7, 1904, at 8:15 P.M. Following is the program: 1. Modes of Infection in Tuberculosis, by Philip S. Sabine, M.D.; 2. Infantile Tuberculosis, its port of entry, topography and clinical manifestations, by Rowland Godfrey Freeman, M.D.; 3. The Influence of Bovine Tuberculosis on Human Health, by Mazyk P. Ravenel, M.D., of Philadelphia; 4. The Prevention of Tuberculosis in Children, by Hermann M. Biggs, M.D.; 5. Discussion of the Papers, by Dr. Thomas Darlington, Commissioner of Health; Drs. W. P. Northrup, Emmett L. Holt, C. N. Dowd, S. M. Hamill, of Philadelphia, and others.

Prof. Lefferts' Farewell Lecture.—On Monday, March 28, Professor George M. Lefferts gave his farewell address to the clinical assistants and Class of 1904 at the Vanderbilt Clinic. The pit was very tastefully decorated and three larges vases were filled with roses and placed on the speaker's table. Upon the Professor's entry into the room the audience arose in a body and applauded for nearly five minutes. Following this, George Lathrop, President of the Senior Class at the College of Physicians and Surgeons, presented a costly loving cup in behalf of the students and spoke very tactfully and feelingly of the regard in which Dr. Lefferts has so long been held by generations of medical students. Dr. W. K. Simpson, who will succeed Dr. Lefferts as professor of laryngology, then arose and in a fitting speech presented a loving cup in behalf of the clinical assistants. In accepting the gifts Prof. Lefferts said that doubtless popularity has its advantages, but it also has its disadvantages, for now he too would be obliged to make a speech, but in anticipation of their demands upon him he had come forearmed (withdrawing a manuscript from his pocket). He had learned to know the method, manner and meaning of medical students' applause through his long years of teaching and felt that he could interpret rightly their very kind feelings on this present solemn occasion. For thirty years he has engaged himself in active teaching of laryngology, and when he began nobody elected his course because it seemed of so little practical value to the general practitioner. His

was the first clinic of the kind in New York and the third in the whole United States. In May, 1876, he was made a full Professor with the power to organize and control the clinical work of the department. So well has this been done that the Class of 1900 offered to the Faculty the opinion that his clinic was the best systematized and best adapted for medical teaching of any in the college. By a vote of the Faculty and Trustees of Columbia he has been made Professor Emeritus and it is his hope that his administration will be accepted by all men as able, dignified and honorable. His entire collection of teaching apparatus has been presented to the Trustees "for the benefit and free use of coming generations of medical students." All this he said in no spirit of vain self-glorification, but the love for his clinic has grown with the years and of this he speaks not of himself. In addressing Dr. Simpson he said that he believed him to be earnest and devoted to the work which he has carried on at Vanderbilt Clinic for seventeen years. It is not so much the matter or subject that one has to present as his manner of presenting it, and in offering this advice he wished his successor Godspeed. All the members of Prof. Lefferts' family were present, including the nurses who had served him so long, and the exercises made a deep impression upon them as well as upon the general audience.

PHILADELPHIA.

New Society Against Tuberculosis.—The delegates called to meet in Philadelphia to consider the founding of a national society against tuberculosis were entertained at dinner on the evening of March 28 by Dr. L. F. Flick. Abstracts of the address that was to have been delivered by Professor Maragliano, who was detained by illness, were distributed. The meeting held afterward was presided over by Dr. William Osler. After some discussion it was decided to found a National Society for the Prevention of Tuberculosis. An executive committee consisting of Drs. Trudeau, Biggs, Flick, Welch and Sternberg, with the chairman and secretary of the meeting as members *ex officio*, was appointed. This committee is to have full charge of arrangements for perfecting the new organization, including election of officers, etc. It was the sense of the meeting that the new society have no affiliation with either of the so-called International Congresses on Tuberculosis now under way in this country. The name of this new society is the United States Society for the Study of Tuberculosis. The President is Dr. William Osler; Secretary, Dr. Henry B. Jacobs. The committee of five was appointed to plan a permanent organization to be effected at the meeting of the American Medical Association at Atlantic City in June.

Philadelphia Hospital Examination.—At a conference between the Mayor and the deans of the various medical colleges it has been decided to hold the examination of candidates for internes at the Philadelphia Hospital on May 10. The Mayor will appoint the members of the examining board who, it is stated, will have no affiliation with any of the medical colleges. There are 19 vacancies to be filled, and it is said that if 19 women get the highest marks they will be appointed.

Attempts to Form Nose Unsuccessful.—Two attempts have been made by Dr. Charles H. Frazier, at the University hospital, to form a nose for a young man who lacks that organ. Each time the patient has spoiled the results of the operation and it is said that further attempts may not be feasible. The fourth finger of the patient's hand was fastened to the desired place but the pain of keeping the arm in the necessary cramped position was too great for the patient who each time tore the finger loose.

To Enforce Vaccination.—A bill giving the Department of Health power to enforce vaccination is to be introduced into the next legislature. The only compulsory vaccination law now in force in Pennsylvania is that relating to school children, although vaccination may be made partially compulsory in cities of the second and third class.

American Society of Tropical Medicine.—At a meeting of this society held March 21, Dr. W. M. L. Coplin exhibited specimens illustrating diseases of the tropics, including dysentery, abscess of liver, leprosy and uncinariasis. Dr. McConnell exhibited for Dr. Joseph McFarland some specimens of the Leishman-Donovan blood parasite, through the courtesy of Sir Patrick Manson, an honorary member of the society. Dr. J. M. Swan showed for Dr. Allen J. Smith gross specimens of the *Hymenolipsis nana*. Election of officers for 1904 resulted as follows: President, Dr. Thomas H. Fenton; Vice-Presidents, Dr. J. J. Kinyoun, Dr. James M. Anders, Dr. Alfred Hand, Jr.; Secretary, Dr. Joseph McFarland; Assistant Secretary, Dr. John M. Swan. The Councilors for the year are Drs. Roland G. Curtin, Judson Daland, John V. Shoemaker, Allen J. Smith and W. M. L. Coplin.

Filters to Lower Typhoid Rate.—Chief Hill, of the Filtration Bureau, from a statistical investigation of the cases in the city at present says that when the filtration is completed the typhoid rate will be lowered at least 80 per cent. This is based on the comparison of cases for the past eleven weeks in the Twenty-first and Twenty-second wards, which have filtered water, with those in the remainder of the city. In the former the weekly average for each 100,000 of population was 3.7 cases; in the latter it varied in different localities from 10.4 to 13.8 cases. The present epidemic is not abating.

Cerebral Form of Grip.—Physicians report as epidemic a form of the grip that in its first stages is difficult to differentiate from meningitis. There were 8 deaths from the disease last week. It is estimated that 8,000 persons are now under treatment for the disease in its various forms.

Anniversary Dinner.—The anniversary dinner of the Henry Phipps Institute was given by the Staff at the University Club on Monday evening, March 28. The delegates to the convention, which was called to consider the question of forming a National Organization for the Study of Tuberculosis, were all invited as guests of the occasion. Sixty-two persons were present, among whom were many of the most eminent physicians of the United States. The feature of the evening was the presentation of a silver pitcher to Dr. Lawrence F. Flick, the Director of the Henry Phipps Institute, by the members of the Staff, as a token of their esteem. Mr. Henry Phipps, the founder of the Institute, was present, and made the presentation in the name of the Staff. Among those who spoke after dinner were Dr. Abraham Jacobi, of New York; Dr. William H. Welch, of Johns Hopkins University; Dr. Vincent Y. Bowditch, of Boston; Dr. John M. Prior; Dr. Charles L. Minor, of Asheville, N. C.; Dr. George M. Sternberg, former Surgeon-General of the Army; Dr. John B. Huber, of New York; Dr. Ward, of Albany, N. Y.; Dr. Henry B. Holton, of Brattleboro, Vt.; Dr. John Musser and Dr. James Tyson, of University of Pennsylvania, and Dr. J. C. Wilson, of Jefferson Medical

College. Dr. L. F. Flick acted as toastmaster and chairman, and Dr. M. P. Ravenel spoke for the Staff of the Henry Phipps Institute.

CHICAGO.

Chicago Medical Society Endorses Emergency Hospital.—This Society, at its March 16 meeting, endorsed the project of the Iroquois Memorial Association to erect an emergency hospital in the business section of the city, and the following resolutions were unanimously adopted: *Resolved*, That this Society approves and unqualifiedly endorses the action of the Board of Trustees of the Iroquois Memorial Emergency Hospital in their generous effort to give to the people of Chicago a modern, fully equipped and endowed hospital, capable of rendering prompt assistance to those cases of unexpected injury and sickness, which are of daily occurrence, and be it further resolved, that we, as a Society, tender to the hospital our counsel, advice, and professional services whenever required.

Necessity for Iroquois Memorial Hospital.—According to Commissioner of Health Reynolds, necessity for such a hospital may be inferred from the following statement of cases handled by the police of the district north of Harrison street during 1903: Number of casualties, 734; number found unconscious, 56. These cases were all removed to hospitals by the police, and the total does not include fully 10 per cent. more injured persons removed to their homes, many of whom were severe cases, who should have been taken to a hospital but for the distance. Nine of the 790 cases died en route to the County Hospital, an average distance of more than two miles from where they were injured, over rough, ill-paved streets. Those found unconscious were chiefly persons suffering from fracture of the skull or from poison; some of these died who might have recovered with prompt hospital care. Another class found unconscious, which especially needs the medical skill of experts, embraces cases of coma, the result of disease, and not from alcohol, which latter it closely resembles in its symptoms. A downtown emergency hospital, thoroughly equipped, is a necessity.

Medical and Dental Professions Unite on Questions of Legislation.—The Chicago Medical Society and the organized dental profession agree that all questions of legislation and larger public policy relating to medical and dental affairs shall be referred to a committee, to be known as the Committee on Public Relations. This Committee is to consist of ten members, five from each profession. It shall have a Chairman and a Secretary. Any question of public policy or public relation affecting either the medical or dental profession, or of legislation affecting directly or indirectly either of them, can be referred to this Committee. It will be the duty of the Committee to carefully consider these questions. It will have the power to recommend either specific action or general attitude to the societies from which the members come as delegates. There shall be an annual meeting of the Committee at which organization shall be effected and continued. Other than this the meetings shall be special, and can be called by the President or by any two members. The officers shall be elected for one year. The method of election of the delegates and the length of their service shall be regulated by the societies which they represent.

Sarcoma of the Hip Joint.—Dr. Wagner demonstrated before the North Branch of the Chicago Medical Society a patient upon whom he had performed a hip-joint amputation for sarcoma five years ago, with absolutely no signs of recurrence. The patient was fifty-five years of age; the picture of health, and weighs more now than at any period of his life. The stump, a solid, heavy upholstering of good muscular tissue, shows the scar of the incision very favorably situated, namely, so high anteriorly that when the patient is seated on a chair it is far removed from any pressure. This method of operation shows the great advantage of the use of long vulsellum forceps inserted in both flaps to the number of three or four as forceful hemostats, as well as their superiority to retractors. Inasmuch as the latter may slip, tear, and through their insertion and reinsertion mutilate the tissues and increase hemorrhage, hemorrhage is avoided or fully controlled by the forceps mentioned above. They facilitate greatly the manipulation of the flaps; after their insertion, large compresses are placed between the flaps, and then by means of dovetailing the forceps steady compression for a short time is exerted. This insures absolute hemostasis. The flaps are then slowly and gradually separated, the blood vessels caught with small hemostats just as they appear on the small exposed area, etc., until all the blood vessels are within the grasp of the hemostats which renders the operation almost bloodless. This procedure is preceded by ligating the femoral artery. For closing the wound a silk suture, guarded with rubber tubing, was employed. The author frequently uses this suture material for uniting the flabby abdominal walls, and it was used in this case with great satisfaction. Microphotographs made by Dr. Herzog from the specimen which had been dissected out of the tumor several weeks previous to the operation confirmed the diagnosis of sarcoma, and in which Prof. Nicholas Senn, Dr. Daniel R. Brower, and Dr. Wagner concurred. Dr. Wagner reported three additional cases.

Penal Hypospadia.—The patient, fourteen years of age, was operated on two months ago. The same method as Carl Beck described in the *New York Medical Journal* for 1898 for balanitic hypospadias was resorted to, namely, two lateral incisions from each side of the median line along the sulcus corona glandis, fusing in an incision following the urethra towards the scrotum, 2½ inches in distance, were made. The urethra was dissected out, and then pulled through the opening which was established by running a double edged knife through the glans penis in the direction which the normal urethra takes, and the distal part of the urethra, after being pulled out through this opening, was sutured with catgut to the external opening of this new canal. The wound edges of the flaps were then united, followed by primary union. After the lapse of fourteen days the new opening contracted, which necessitated splitting of the meatus and suturing. By means of the daily use of a sound the meatus has remained satisfactorily patent. It is interesting to note that during the healing period there was no inflammatory reaction from the urine passing over the wound. Furthermore, the patient did not experience any pain, not even during the first day. The use of a constricting rubber tube rendered the operation bloodless.

Extirpation of Metacarpal Bones.—Extirpation of the second, third, and fourth metacarpal bones (after loss of three fingers and crushing injury to the metacarpal bones with great defect of integument, volar as well as dorsal) with perfect functional result. This result was obtained by careful dissection and saving of the adductor pollicis and digitii mininti muscles

and the branches of the median and ulnar nerves which constitute the nerve supply for the muscles in question. At first, the fingers were in a paralytic condition, as one might expect, but by daily massage and the application of electricity by the author himself the patient (the hand has the appearance of a lobster-shears) has full use of the fingers which were affected and is now able to earn his own livelihood through caligraphy with this hand, and has also become an expert performer on the zither.

Radical Mastoid Operation.—Dr. Wm. L. Ballenger showed a young woman, aged sixteen years, who, about nine years ago, was vaccinated. The vaccination was followed by a discharge from the left ear, and as far as could be learned, it was the cause of the ear trouble. Four years ago she came under his observation, was treated by conservative methods for a year and a half, with only temporary relief. Three years ago he did a radical mastoid operation, finding cholesteatomatous masses in the middle ear and mastoid cavity, with suppuration, caries, and perforation in the middle fossa of the skull. There was marked meningeal irritation. The operation afforded relief, but subsequently there was necrosis in the mastoid portion of the wound, which necessitated a second operation. A few days following the second operation he resorted to Thiersch grafting in the mastoid portion, and a week or two later did a Thiersch graft in the middle ear cavity. At present the middle ear as well as the mastoid is completely lined with healthy skin. The case was interesting on account of the Fallopian canal being exposed, showing plainly the location of the facial nerve. The Eustachian tube was likewise visible through the mastoid wound. There only remained a little suppuration within the Eustachian tube. He expected to close the tube later, and having done it, the mastoid wound would be closed by a plastic operation, and the speaker hoped that with paraffin injections he would be able to avoid much deformity The patient is entirely well and has been since last October.

Left Bronchial Fistula.—Dr. Allen B. Kanavel reported a case of left bronchial fistula in a child of seven years, which has been present since birth. It is located at the most common site—within an inch of the sternoclavicular junction, and passes directly upwards towards the upper border of the hyoid bone. It cannot be followed farther, although when it fills up, as it does at times, any manipulation of the tract gives rise to a coughing attack. There is no cervical auricle, but the tract is marked by a firm band of tissue which is probably connective tissue. The other members of the family show no evidence of any congenital anomaly, with the exception of a brother who has hydrocephalus.

Coccygeal Sinus.—Dr. Kanavel demonstrated a second case of coccygeal sinus which was operated upon under the diagnosis of anal fistula. Upon operation, a large mass of hair and epithelial débris was found the size of a walnut, and the history was elicited that although the patient had suffered within the last year from an acute attack simulating an ischiorectal abscess, and this discharging sinus had been very marked since, still he had noticed a constant moisture and slight irritation for a number of years previously. The fistula was in the median line and about half an inch below the tip of the coccyx.

Some Notes on the Therapeutics of Tonsillitis.—At the March meeting of the Chicago Pediatric Society, Dr. J. Scott Brown, in a paper on this subject, after dismissing the subject of chronic tonsillitis with the remark that he considers a large percentage of the cases to be of the rheumatic type, and that he treats them locally and systemically with tincture ferri chloridi, the formalin and formalin iodine sprays, and Seiler's solution used as a douche for the nose and throat mentioned below, took up the treatment of acute tonsillitis, making special mention of the follicular variety. His routine treatment for such cases, basing dosage on the adult, is: Calomel, $^1/_4$ gr. every half hour, until six doses.

℞ Tr. aconite root..... gtt. $^1/_5$
Tr. bryonia..... gtt. $^1/_{10}$
Tr. belladonnæ..... gtt. $^1/_{10}$
Red iodide of mercury..... gr. $^1/_{100}$

In each tablet, given one per hour until eight per day are taken.

Quinine tablets, each gr. 1, are given every hour until eight are taken.

Alcohol and water, as a gargle is employed, t.i.d.

℞ Formalin (40 per cent. sol.)..... ♏ iii
Glycerini..... ʒ ii
M. et add
Aquæ, q.s. ad..... ʒ i
M. Sig.: Spray throat, t.i.d., between gargle.
And
℞ Formalin..... ♏ iii
Glycerini..... ʒ vi
M. et add
Tr. iodine..... ♏ xx
M. et add
Alcoholis..... ʒ iv
Aquæ, q.s. ad..... ʒ iv
M. Sig.: Use as a spray following immediately the last spray.

He says that part of the treatment is empirical, but that he finds his cases, even with temperature of 102° or 103° F., can generally return to their usual avocations in about forty-eight hours, and cited illustrative cases.

Undescended Testicle. The third case reported by Dr. Kanavel was one of undescended testicle on the left side. The testicle lies in the inguinal canal and has not changed its position for a number of years, and has given rise to no trouble until about a year ago, when, after a severe strain, a mass developed suddenly at the same site, followed almost immediately by a sickening pain characteristic of that usually experienced when a blow is received on the testicle. This was accompanied by vomiting. All symptoms would disappear as suddenly as they came on, when the mass was replaced in the abdomen. Repeated attacks of this nature helped to make the diagnosis of congenital hernia; the symptom was due to pressure from the distended cyst.

GENERAL.

Bubonic Plague in Peru.—United States Minister Dudley cabled the State Department from Lima on March 25 that bubonic plague had broken out in San Pedro, Callao, and Lima.

War on Mosquitoes in South America.—An active campaign against the spread of yellow fever and malaria, by an organized war against mosquitoes, has been started at Guayaquil, Ecuador, as the result of suggestions of Dr. Gruver, the resident officer of the United States Marine Hospital Service.

Medical Library and Historical Journal.—The first number of the new year of the *Medical Library and Historical Journal* has just arrived. It is an extremely attractive publication and merits the attention of the entire medical public. Dr. James J. Walsh has a most able article on the Popes and their relation to the his-

tory of anatomy, in which he shows that the Popes were not so greatly opposed to the study of anatomy, as some writers have affirmed. Dr. William Osler contributes an interesting account of the "Phthisiologia" of Richard Morton, and Dr. Isadore Dyer has an instructive study of the origin of the Louisiana leprosy. A short history of Winslow, and a brief paper on Medicine in Its Relation to Human Progress are other papers in this number.

Johns Hopkins University.—The medical department has announced the first course of lectures on the Herter Foundation. Prof. Paul Ehrlich, M.D., LL.D., director of the Royal Prussian Institute of Experimental Therapeutics, Frankfort-on-the-Main, will lecture in German, April 12, 13 and 14, on subjects related to immunity.

American Academy of Medicine.—The Twenty-ninth Annual Meeting of the American Academy of Medicine will be held at the Shelburne, Atlantic City, beginning on Saturday, June 4, at 11 A.M., and continuing through to Monday, June 6. The program includes: 1. The report of the Council on the recommendation of a paper read at the last meeting by Dr. H. Bert Ellis, of California, on "The Necessity for a National Bureau of Medicine and Foods." 2. The report of the committee to investigate the teaching of Hygiene in our public schools. In order that this report may be discussed intelligently, the committee will publish the laws relating to the teaching of hygiene now in force in the United States, in the Bulletin of the American Academy of Medicine, to be published in April, 1904. It is believed this is the most complete and accurate compilation of these laws published, and the only compilation issued in an easily accessible and low priced publication. (Any number of the Bulletin will be sent to any address upon receipt of 50 cents.) 3. The reports on the results of the examinations before the various State Boards of Medical Examiners of 1903. 4. A Symposium on the Relation of Physicians to Dentists and Pharmacists. Several papers of value are promised for this Symposium and the subsequent general discussion will be helpful. 5. A Symposium on—Are Modern School Methods in Keeping with Physiologic Knowledge? There is probably no subject of general interest that should be directed by the medical profession, of more importance than this. Apart from the papers promised, arrangements are being made for a discussion opening up the whole subject from various points of view. 6. In addition to the above, there will be several papers upon independent topics, affording a variety to the program.

Massachusetts Medical Society.—At its meeting on March 23, 1904, the Massachusetts Medical Society, Suffolk District, Section for Obstetrics and Diseases of Women, elected Dr. Daniel H. Craig as its President. On March 24, after presenting a paper for their consideration, Dr. Craig was given an Honorary Membership in the New Hampshire Surgical Club, at its Semi-annual Session, held at Concord, N. H.

Pathological Exhibit at the St. Louis World's Fair.—There will be a pathological exhibit at the World's Fair in St. Louis under the auspices of the American Medical Association. The exhibit, which will be held in the Palace of Education in a gallery over the east main entrance, will be of wide scope, covering the field of general pathology and bacteriology. The President of the Association has appointed the following Exhibit Committee to take charge of the work: Executive members: Ludwig Hektoen, Chicago; A. J. Ochsner, Chicago; W. A. Evans, Chicago; W. T. Eckley, Chicago; L. F. Barker, Chicago. District members: J. N. Hurty, World's Fair; Frank F. Wynn, Indianapolis; Max Herzog, Philippine Islands; V. C. Vaughan, Ann Arbor; W. W. Keen, Philadelphia; J. S. Billings, Jr., New York; Philip King Brown, San Francisco; Ellsworth Smith, Jr., St. Louis; Allen J. Smith, Philadelphia; F. W. Farham, New Orleans; R. M. O'Reilly, U. S. Surgeon-General. Dr. Ellsworth Smith, Jr., who has charge of the St. Louis district, has appointed the following Advisory Committee to assist him in the organization of an exhibit for his district: Drs. Y. H. Bond, H. W. Bond, John Young Brown, B. Meade Bolton, Willard Bartlett, N. B. Carson, O. H. Elbrecht, W. E. Fischel, B. M. Bypes, Bransford Lewis, H. W. Loeb, Robert Leudeking, B. G. Mudd, Henry Schwarz, Chas. Shattinger, J. H. Simon, C. A. Snodgrass, Justin Steer, Hugo Summa, Robert Terry, E. F. Tiedemann and H. Tuholske.

American Institute of Physical Culture.—Jay W. Seaver, M.D., Medical Examiner at Yale University Gymnasium, President of the Chautauqua School of Physical Culture, President of the American Institute of Physical Culture of Boston, and the highest authority on Anthropometry, addressed the physicians of Boston and vicinity, at the rooms of the Institute, 29 Beacon Street, Boston, Mass., on Saturday, March 26. "Exercise," said Dr. Seaver, "may not only be classified as one of the necessities of life, like food and air, but it may be looked upon as a therapeutic means of very high value. Exercise may be divided into two general classes, as active and passive, the first being made up of movements that are directed by the central nervous system, consisting of such movements of the various parts as cause a complete flexion and extension of the joints with the consequent stretching of the muscles that would ordinarily produce these joint movements; and second, the muscles may be subjected to mechanical pressures and kneadings that will stimulate the circulation of both blood and lymph, and produce nutritive changes that are quite similar to those set up by active exercise. These passive movements have been grouped under the term massage. A combination of active and passive movements may be used at times with advantage, the attendant resisting the active movements of muscles in a more or less vigorous manner according to the condition of the muscles that are being treated. The abnormal conditions that are best treated by exercises are those of the nervous system where there is a tendency to inertia and explosive action. The normal working of the motor portions of the brain with the attendant activities of large sensory tracts will treat the entire nervous system by one of those fundamental processes that is so essential to vitality and to the smooth or well coordinated functions of the brain. The utilization of nerve force through these normal channels will usually prevent the explosive action of the nervous system along abnormal lines. One sees a good illustration of this in the restful sleep that follows a hard day's work of physical activity, and the opposite effect in the restless, fitful sleep where the day's work has been of an intellectual character and accompanied by no physical activity that has, so to speak, called the brain back to its fundamental processes."

American Association of Pathologists and Bacteriologists.—This association held its fourth annual meeting in New York on April 1 and 2. A report of the Proceedings will be found in a subsequent issue of the Medical News.

Tenth International Congress of Ophthalmology in Lucerne.—In compliance with the request of numerous foreign colleagues, the date of the Congress has been changed. The official reception of members will now take place in the evening of September 13; the mornings and afternoons of September 14, 15 and

16 will be devoted to scientific work, and on September 17 an excursion will bring the Congress to a close Those colleagues wishing to secure accommodation at Lucerne beforehand, are advised to apply, before September 1, to Dr. F. Stocker, president of the local Committee at Lucerne. He will engage for them rooms at one of the best hotels (early breakfast included), at 5 francs a day each person.

American Neurological Association.—This association has fixed the time of its meeting at St. Louis for September 15, 16 and 17; and this will be immediately followed by the sessions of the various medical departments of the Congress of Arts and Sciences, beginning September 19.

Seventh Annual Meeting of the American Gastro-enterological Association.—This society will meet at Haddon Hall, Atlantic City, N. J., June 6 and 7, 1904. The program will consist of a Symposium on Gastric Ulcer, to be participated in as follows: Introduction, J. C. Hemmeter, of Baltimore, Md.; Bibliography, Charles D. Aaron, of Detroit, Mich.; Pathologic Anatomy, Harlow Brooks, of New York; Pathogenesis, W. G. McCallum, of Baltimore, Md.; Incidence of Gastric Ulcer in the United States, Campbell Howard, of Baltimore, Md.; Gastric Ulcer in Children, E. G. Cutler, of Boston, Mass.; Symptomatology and Course, Max Einhorn, of New York; Atypical Forms, G. W. McCaskey, of Fort Wayne, Ind.; Complications and Sequelæ, M. Manges, of New York; Conditions of Blood and Urine, T. Futcher, of Baltimore, Md.; Differential Diagnosis, H. W. Bettman, of Cincinnati, Ohio; Further Remarks on the use of Orthoform in the Diagnosis of Gastric Ulcer, F. H. Murdoch, of Pittsburg, Pa.; Medical Treatment, S. W. Lambert, of New York; Surgical Treatment, Joseph A. Blake, of New York; Classification of Gastric Ulceration and Hemorrhage, Report of Case of Perforating Angiosclerotic Gastric Ulcer, A. L. Benedict, of Buffalo, N. Y.

OBITUARY.

Dr. John Metcalfe Polk died of pneumonia at the home of his parents, 7 East Thirty-sixth Street, on Tuesday, March 29, at 1.30 A.M. He was the son of Dr. William M. Polk, Dean of the Cornell University Medical College, in New York City, and grandson of Bishop Leonidas Polk, of Tennessee, Lieut. General in the Confederate Army. He was born May 6, 1875, and was graduated from the Sheffield Scientific School of Yale University, receiving the degree of Ph.B. in 1896. He was one of the prominent men in his class and a member of the Delta Psi Fraternity. In the following year he began the study of medicine and was graduated from the Cornell University Medical College in 1899, second in his class. From January, 1900, until January, 1902, he served as interne on the Second Medical Division of Bellevue Hospital, and during the following year took a postgraduate course abroad, chiefly in Vienna. On returning to this city in December, 1902, he was immediately appointed one of the instructors in the Medical College from which he received his M.D. degree and at the time of his death was Instructor in Medicine and in Physical Diagnosis. Last fall his industry, his thorough training and his remarkable clinical abilities won him the position of Adjunct Assistant Physician in Bellevue Hospital. Dr. Polk was a man of attractive personality, unusual force of character and of great promise. During the past winter he had been conducting some experimental work upon the hemolytic action of the blood in infectious disease which his colaborers in the laboratory considered of remarkable value. This had practically been completed when he was taken ill, and it is earnestly hoped that the results interrupted by his death may be collected and published. The loss of so fine a man will be greatly felt by the profession at large, and particularly by the faculty and students of the Medical College; and the large circle of those who know and so highly esteem his father will feel the keenest sympathy with his parents in their great sorrow.

Dr. David McKay died in Dallas, Tex., on Wednesday last. He was born in Glasgow, Scotland, in 1832, served on a British warship as surgeon in the Crimean war, settled in New York, and in 1861 enlisted in the Seventy-ninth New York Volunteers. Six years ago he was made surgeon general of the Grand Army of the Republic.

Dr. A. B. Arnold, for many years well known in Baltimore, is dead at San Francisco. He was graduated in medicine at Jefferson College and was professor of nervous diseases at the Baltimore College of Physicians and Surgeons from 1876 to 1898, when he went to California. He wrote much for medical and literary magazines.

Dr. George H. Butler, of this city, died last week in the sixty-second year of his age. He was graduated from the Bellevue Medical College in 1869, and was a member of many medical societies, including the Medical Society of the County of New York, the New York Physicians' Mutual Aid Association, the New York Academy of Medicine, and the New York Chemists' Association.

Dr. C. M. Garrison died in Salt Lake City, on last Saturday from cerebral meningitis. Before going to Utah, twelve years ago, Dr. Garrison practised his profession in New York City.

Dr. Alfred Duperier died last week at New Iberia, La., the town that his father founded over a century ago. Dr. Duperier was born there in 1826, and was graduated from the University of Michigan. He was an earnest Whig of old, remained a Union man during the Civil War and advised with Lincoln and Sumner about Louisiana affairs. He rendered effective service in the yellow fever epidemics of 1853 and 1867 in southwest Louisiana.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, March 12.

THE CRUSADE AGAINST CONSUMPTION—THE VENTILATION OF THE HOUSE OF COMMONS—DOCTORS IN PARLIAMENT—A MINISTER OF HEALTH.

On March 10 the annual general meeting of members of the National Association for the Prevention of Consumption and other forms of Tuberculosis was held under the presidency of the Earl of Derby. There was a very scanty attendance. Reference was made in a previous letter to the prevalence of consumption among Post Office employees here. Some of your readers may therefore be interested to know that at the meeting in question it was announced that the Postmaster-General has sanctioned the organization of an effort to raise a fund sufficient for the endowment of 100 beds for employees suffering from consumption. The beds to be endowed are in the Sanatoria erected by the National Committee for patients who, though not well-to-do, are able to contribute something toward the cost of their maintenance and treatment. The fund for the purpose is to be raised by periodical stoppages of pay. The report of the Council showed that the Association is, financially speaking, in a bad way. Indeed the Honorary Treasurer, Mr. Malcolm Morris, stated that if

public support is not forthcoming to a much larger extent than has hitherto been the case, the Association must before long, as Carlyle would have put it, "deliquesce." The report further stated that during the past five years the Council had made strenuous efforts to induce medical officers of health throughout the country to impress on their authorities the advantages likely to follow the adoption of a system of voluntary notification of phthisis. A Select Committee of the House of Commons recently sanctioned a corporation by-law for Sheffield, in which notification of tuberculosis of the lungs is made compulsory on every registered medical practitioner called upon to visit any person suffering from such disease. As to the isolation of consumptive cases in workhouses and asylums, steps have been taken by a few boards of guardians in Great Britain to deal with the question. Considerable progress in the erection of sanatoria has been made during the year, and a new edition of the list of such institutions published by the Association shows that there are now some 70 institutions in the United Kingdom, making a total of 2,760 beds. This is an increase of 18 institutions and 375 beds over the return in October, 1902. The majority of these institutions are, however, for private paying patients, and the need of providing accommodation for the poor consumptive is still extremely urgent. There are at the present time 935 members of the Central Association, and 2,900 of the branches, making a total of 3,835. There are now in the United Kingdom 20 branches of the Association and five kindred associations. During the year new branches were formed at Hereford and the Aberystwith University, which has constituted itself into a separate branch of the West Wales Branch. At the present time a sanatorium for 60 beds is rapidly approaching completion at Winsley, with 40 free beds and 20 beds at an average charge of about 6s. a week. Glasgow is raising funds for the provision of a sanatorium; the West Wales Branch has obtained a site and is appealing for funds; the Leeds Association has a sanatorium for 30 beds; the Devon and Cornwall Branch have started their sanatorium at Didworthy; and the Cumberland Branch has procured a site to build a sanatorium; Paisley and one or two other centers are taking measures to provide sanatoria. In addition to the branches in the United Kingdom, colonial branches or kindred associations have been formed in Canada, Victoria, New South Wales, South Australia, Natal and Cape Colony.

For many years past constant complaints have been made by our legislators of the foul atmosphere in which they have to do their work in the House of Commons. Several committees have been appointed to investigate the causes of the evil and to suggest a remedy. Counsel has been sought of architectural, engineering, sanitary and medical oracles, and large sums of public money have been expended, but the House of Commons has still the reputation of being one of the worst ventilated buildings in His Britannic Majesty's dominions on which the sun never sets (and in some parts of which it hardly ever rises). The air in the House swarms with bacilli of the most ferocious species, and in the state of diminished resistance caused in Members by the vitiated atmosphere in which they discharge their legislative functions, these invisible enemies of the human race find them an easy prey. Some years ago the House was almost decimated by influenza. Is it surprising in the circumstances that our politicians waste their time in interminable wrangles which lead to nothing; if in their speeches Ministers temper ineptitude with irritability, and if the leaders of the Opposition seem to suffer from intellectual asphyxia? The mental state of the House, once called by John Bright the august Mother of Parliaments, may often fairly be described in the words in which the author of the *Dunciad* sings the final triumph of dulness

"And universal darkness covers all."

There is now promise of a better state of things. Various measures suggested by a Select Committee which sat a few months ago are to be adopted. A new ventilating plant is to be installed forthwith. A tunnel which runs from the Chamber to the terrace on the river Thames will serve to harbor a monster fan, driven by a 30-h.p. electric motor. This fan will suck in the fresh air from the terrace, but before reaching the House the air will pass through iron frames covered with the finest copper gauze, and will be cleansed of all impurities by water sprays constantly playing upon the metal mesh. On foggy days the air will probably be passed through cotton wool—a method stated to be remarkably effective in purifying the atmosphere. Before reaching the House the air will be heated and delivered through the perforated stall-boards and a large grating covered with open-work matting in the center of the Chamber. It is estimated that 50,000 cubic feet of air can be introduced per minute. It may be hoped that the effects of an improved ventilation may soon manifest themselves in better legislation. The method of dealing with fog might perhaps find a wider application than was dreamed of by the Select Committee. Poor Oscar Wilde, in one of his plays, expressed a doubt whether it was the fogs that caused the serious people or the serious people that caused the fogs. Seriousness—or to give it its right name, dulness—is so prevalent in our Parliament that its normal condition is to be enveloped in a dense fog. If means could only be devised by which the speeches of most of the Members could be passed through thick layers of cotton wool, a political reform such as it has not entered the mind of any statesman to conceive would be accomplished!

There is a feeling among practitioners of medicine here that both Parliament and the profession would be all the better if the House of Commons contained a larger number of medical members. At present it has scarcely half a dozen, and not one of these can be looked upon as a representative of the great body of general practitioners. It would unquestionably be a good thing for the nation if Parliament had the benefit of the expert knowledge that medical men can bring to the consideration of questions of public health. There are, however, difficulties in the way which are not fully appreciated by the profession. A doctor would have no chance of being elected by any constituency to which he offered himself as such rather than as a politician. In nearly every constituency there is an element—greater in some and less in others—of the foolish hostility to medical men and the science of which they are the hierophants, which appears to be a characteristic of modern democracy. Again, the position of a Member of the British Parliament is one that necessarily involves considerable expense. A contested election costs anything from $3,000 to $10,000. Then every place looks to the M.P. who has the privilege of being its representative to subscribe not only to all the local charities but to the football, cricket, lawn tennis, hockey and other clubs whose name is Legion. A friend estimates that in addition to the extra expenditure caused by the necessity of living a good part of the year in London it costs him about $2,500 a year to represent a small borough. Members for large cities and for counties have to pay a much heavier price for helping to make the laws of a not always grateful country. There are not many men in our ranks who could afford so expensive a luxury as a seat in the House of Com-

mons, and there are practically none in the active practice of their profession who could spare the time required for the proper discharge of senatorial duties. If a medical man takes to politics he is virtually compelled to give up his profession. A suggestion that the British Medical Association should supply the funds required to secure the election of one or two doctors and contribute to their expenses while in the House has found some favor among a certain section of the profession. It is doubtful, however, whether the Association could find the money for such a purpose, and it is almost certain that, even if funds were forthcoming, it could not find the right kind of men. If the sort of person who makes himself most conspicuous as a medical reformer among us were to be sent to Parliament as, even indirectly, a "Member for Medicine," he would simply bring the profession into general contempt.

A step that will help to make the influence of the few medical men who are now Members of the House of Commons more effective was taken on March 8, when a Committee of Public Health was formed to watch all proposed legislation concerning the public health. Dr. Farquharson is the Chairman, and among the Members are Sir Michael Foster, till recently Professor of Physiology in the University of Cambridge, Sir John Batty Tuke, M.D., formerly President of the Royal College of Physicians of Edinburgh, and Dr. Rutherford Harris, the *fidus Achates* of Cecil Rhodes, who is far more financier than physician. Sir Walter Foster, who takes the jumping cat as his political Mentor, at present holds aloof. A movement has been set on foot for the reconstitution of the Local Government Board, which is the Central authority in our sanitary administration, and for the creation of a special Government Department of Health independent of the Board. A committee of which Lord Jersey is chairman has the whole question under consideration. The opinion of the medical profession was expressed the other day by Sir John Batty Tuke, who said: "I am distinctly in favor of a Ministry of Health, and I would have it possessed of strong powers; and I think we shall see a change for the better in our medical administration before long."

TYPHOID FEVER AND CONTACT.

To the Editor of the Medical News:

Sir: The importance of the subject, coupled with its comparative newness, warrants me in this final demand on your courtesy, in the discussion of the part played by "contact" in the dissemination of typhoid fever. The letter from Prof. Vaughan in your issue of March 19 summarized in a masterly citation the conclusions of the special commission which investigated the spread of typhoid fever during our recent war, and shows conclusively, as he states, that the fever, as it prevailed in the national encampments, was disseminated not to any large extent by drinking water, but chiefly by contact. This is a service for which the profession cannot well be too grateful to Reed, Vaughan and Shakespeare, and which has been quite generally acknowledged, as witness the 1903 edition of Osler's Practice. There are, however, one or two statements in Prof. Vaughan's letter on which I think it incumbent on me to take issue, notwithstanding the fact that he based his remarks chiefly on your editorial and not on my article. The brunt of the matter is borne by the final paragraph of his communication, in which he says: "Now, Mr. Editor, I think I am not too positive when I say that whatever Bretonneau or Trousseau may have thought, or whatever Koch propounded 'more than a year ago,' the fact that typhoid fever is spread largely by contact was first demonstrated by American observers." This, I feel, is hardly fair, either to the earlier French observers or to Koch. The theories of Bretonneau and of Trousseau were not mere haphazard notions or suggestions, but represented the only possible conclusion to be drawn from the study of a very large number of accurately and carefully observed epidemics. In the classical work of Trousseau (*Clinique Médicale de L'Hotel-Dieu de Paris*, 1867) more than five pages are given to the elucidation of this theory, and a large number of epidemics are analyzed from the reports of other observers, with the result that no unprejudiced reader can fail to be convinced of their bearing. Says Trousseau, "An analysis of the reports on the typhoid epidemics in the provinces of France, which are yearly presented to the Academy, demonstrates the contagious nature of typhoid fever definitely for all time." And again, summarizing his conclusions as special commissioner on the epidemics of 1857: "Once started, the disease is propagated by a series of transmissions which are sometimes easy, sometimes impossible, to trace." One must, however, read the entire chapter to appreciate how thoroughgoing and logical were the conclusions of this great school of Bretonneau's. It is then hardly just to say that "the fact that typhoid fever is spread largely by contact was first demonstrated by American observers."

The chief point, however, on which I would differ with Prof. Vaughan is his evident identification of this undoubted fact of contact infection, with the recent theory of Robert Koch. The American commission demonstrated that under certain conditions, namely those maintaining in the national encampments, typhoid fever was spread chiefly by contact. The theory of Koch, however, is so much more comprehensive and far-reaching that it cannot in any way be connected with their work; indeed, it may far more logically be regarded as a true descendant of the tenets of the French school, which held that all epidemics were so propagated. Koch believes (1) that for all *practical purposes* the typhoid bacillus may be regarded as an obligate parasite, which cannot under ordinary circumstances maintain its existence for any length of time in streams or wells. (2) That the vast majority of typhoid infections or epidemics are due to the mediate or immediate transmission of the germs of the disease from the person of one victim to the intestinal tract of the next. The ways in which this may happen were illustrated in my letter. (3) That prophylaxis must be reconstituted on an entirely new basis, with the early identification of the ambulant cases of typhus levissima, and the surveillance of all cases as long as stools or urine (Piorkowski) are infected. I fail to see that the American commission in any way anticipated this "Theory of 'contact infection' in typhoid fever."

Finally, I believe you were justified in pointing out that this theory of "contact infection," as elaborated by Koch, is foreign to Americans, although the fact is well understood that transmission by contact under certain conditions, notably such as maintain in army encampments, does occur. Thus Osler, on page 5 of the Practice, 1903, states: "Infection of water is unquestionably the most common mode of conveyance;" but "the possibility of the direct transmission through the air . . . must be acknowledged." Again, on page 2, he emphasizes the water supply and drainage as the general factors in the dissemination of the disease, and instances the encampment epidemics as special examples of supposed contact infection.

I hope I have made clear the historical relationship of these various contributions to typhoid epidemiology.

Like everyone else, I regard the work of the American commission as a model of exact observation and logical reasoning. But I cannot, nevertheless, depreciate the earlier French work, or the more recent advances made by Koch. Respectfully, R. Weil.

March 22, 1904.

SOCIETY PROCEEDINGS.

HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

Regular Monthly Meeting, held January 23, 1904.

The President, Frank M. Daniels, M.D., in the Chair.

Some Cases of Genito-urinary Affections, with Involvement of the Kidneys.—The scientific business of the evening was opened by Dr. Eugene Fuller, in a description of some of these affections. He said that undoubtedly the bacteria coli not infrequently find their way through the kidneys into the bladder where they are the source of inflammatory conditions of various kinds. In these cases it is important that the bladder should have thorough drainage. Some of the cases when they almost look hopeless, give brilliant results under thorough drainage of the bladder, but they die very easily of septicemia, and the greatest care must be exercised not only immediately after the operation, but for a considerable period. In a case under his care not long since, the patient had been drinking hard for some time, and while suffering from delirium tremens had also some retention of urine. It was always a struggle for him to get his bladder emptied and there was more or less residual urine, but this led to a very severe attack of cystitis with absorption of septic material.

Backward Infection.—In this case there was so much albumin and casts in the urine, owing to the fact that an upward infection of the kidneys had taken place from the bladder that a very prominent physician had given the patient up as suffering from chronic Bright's disease in a hopeless stage. He had nearly died on several occasions from edema of the larynx and there was little expectation of saving his life. Perineal section was performed, however, and thorough drainage established. Delirium tremens developed after the operation and the patient was encouraged to drink as much as possible of water in order to keep his kidneys thoroughly flushed out and also to get rid of the alcohol accumulated in the system. After a time this case improved so much that a very good prognosis seemed possible. In the course of time the urine became perfectly clear and entirely free from casts and albumin. It seems not improbable to Dr. Fuller that in a certain number of the cases of diagnosed chronic Bright's disease the affection is really primary in the bladder with a secondary infection of the kidneys, and if the kidneys are allowed to do their work properly without further irritation the supposed Bright's disease disappears, or becomes a comparatively unimportant factor in the case. These are the cases of Bright's disease that live for many years notwithstanding the bad prognosis given by their physicians.

Uremic Symptoms Due to Bladder Conditions.—In another case recently under Dr. Fuller's care there were many symptoms of uremia and the fatal termination was looked for as a near event. A stone was found to be present in the bladder, however, and considerable inflammatory reaction. In this case there had evidently been backing up of the urine into the kidneys, for the ureters on operation were found so dilated that the tip of the forefinger could be passed into either one of them. The specific gravity of the urine in this case was from 1.002 to 1.003, and it hardly seemed possible to save the patient. The stone in the bladder was found to have formed in a pouch behind an enlarged prostate. Because of this complication of conditions it was considered necessary to establish drainage, both above the pubis and in the perineum. Immediately after the operation polyuria set in as a critical symptom of the patient's condition. Some writers say that patients who thus suffer from polyuria with a low specific gravity never recover. This patient, however, had a good stomach and could take fluids in large quantities and when he refused to drink, a vein was opened and 1,500 c.c. of normal salt solution were injected. This was repeated several times, but when the refusal to drink continued, a mouth gag was put in, a stomach tube inserted and a quart of water was poured into the stomach. This patient recovered perfectly, though he still requires a physician's care to prevent complications, having to avoid excesses of any kind.

Pseudo-uremia.—In another case of apparent uremia there were many head symptoms pointing to a urinary intoxication. These had been noted for some time. Under drainage of the bladder the patient recovered completely and now has been perfectly well for nearly a year. He still needs careful nursing and regulation of his diet and living conditions or there may be a relapse. Not infrequently these cases are allowed to leave the hospital too soon after operation, with the result that they suffer from complications and sequelæ of their previous uremic condition. In a recent case a doting daughter thought that she could manage her father better than a nurse and so, eight weeks after operation, she was allowed to take the old gentleman home. A few weeks later he died suddenly from pneumonia, probably as the result of too great indulgence on the part of his nurse in allowing him to expose himself in changeable weather.

Careful Nursing.—Dr. Howard Lilienthal said that he agrees with Dr. Fuller that some of these patients suffering from cystitis with secondary kidney conditions are often helped by surgical intervention, even when their pathological conditions were apparently hopeless. With regard to drainage he has come to realize how important this factor may be in making the result of operation on the bladder more successful. In a case exhibiting uremic symptoms with tendency to polyuria, but having cystitis and an enlarged prostate he has removed the prostate and lost the patient, when, if thorough drainage had first been established, a fatal termination would probably not have occurred He has not always found it necessary to secure drainage by surgical incision into the bladder, but has found that proper preparation for operation can be effectually secured by catheterization of the patient every three hours, day and night, for several days before operation. This gets rid of the bacteriuria and the often more or less pea-soup-like urine of the patient becomes perfectly clear.

Perineal Drainage.—In Dr. Lilienthal's opinion perineal drainage adds an element of danger to the case. The urine is allowed to come in contact with planes of muscles in the perineum which may easily permit infiltration of the surrounding tissues. On the other hand, suprapubic drainage, if carefully accomplished by means of siphonage in the hands of attendants who are familiar with this method of drainage, leaves none of the risks of insidious infiltration of urine that may occur when the perineum is opened.

Dr. Frederic C. Curtis said that in his hands perineal drainage has always seemed to give better results. He believes that many so-called kidney diseases are really not primary nephritis, but secondary infections of the

bladder, due to the backing up of infected urine. These infections are often from the urethra up and not from the kidney down. Perineal drainage is certainly better than trying to retain a catheter constantly in the bladder for purposes of drainage, since this so often proves a source of irritation. Very frequent catheterization in those patients whose bladders are already of very low resistive vitality is apt to set up serious infections of various kinds. The most careful cleansing of the catheter leaves still many bacteria in the urethra to be carried back into the bladder. It must not be forgotten that kidneys have sometimes been extirpated with the idea that they were primary surgical kidneys, when they were really secondary infections.

Suprapubic Drainage.—Dr. Robert H. Green said that in his experience for chronic conditions of the bladder, suprapubic drainage is better than perineal drainage. There has been a tendency to overdo perineal drainage. In tuberculous conditions within the bladder this is especially true. More care must be exercised, however, to keep up suprapubic drainage. The nurses who take care of the patient must be used to this form of treatment so as to be able to keep the skin from getting infected or even irritated, for this forms a favorable nidus for the growth of bacteria and exposes the patient.

Dr. Follen Cabot said that the most important thing with regard to serious bladder and other genito-urinary conditions is careful treatment after operation, carried out over a long period. The route of drainage does not make so much difference as the method of treatment afterward.

Dr. Fuller, in closing the discussion, said that frequent catheterization, with the idea of emptying the bladder of infected urine, will not avail much if the prostatic condition present be serious. For milder cases it does very well and is to be commended. Where there has been retention of urine over a long time it is a useless waste of time to attempt to clear up the urine by means of catheterization.

New Cystoscope.—Dr. Follen Cabot presented a new cystoscope. This has many advantages over previous instruments. For instance, after the ureters have been catheterized, the cystoscope may be withdrawn, leaving the catheters in place for five or six hours, if necessary. If the urethral instrument is allowed to remain for more than a half hour, patients usually become very restless. Some patients become intolerant of it even before this length of time has elapsed. The oval shape of the cystoscopic tube in Dr. Cabot's instrument gives more room for the same size of caliber and is better for a contracted urethra, especially for such contractions as occur near the meatus.

Colon Bacillus in the Kidney.—The paper of the evening on this subject, was read by Dr. Robert H. Green. He said that he did not mean to have any reference to surgical kidney. Twenty years ago it was thought that the knowledge of nephritis was pretty accurate and that its diagnosis could be made from urinary examination. Notwithstanding this, however, uremia followed by sudden death, sometimes occurring without any urinary symptoms. Often, however, small abscesses were found to be present in the kidney in these cases. In recent years it has come to be realized that many bacteria find their way into the urine without injury to the kidneys, and this has been found to be especially true of the *Bacillus coli communis*.

Confusing Methods of Treatment.—A number of methods of treatment for nephritis have been suggested which, far from proving helpful, have tended rather to confuse the practitioner. A number of drugs have been vaunted as good for nephritis or preventive of the occurrence of bacteria in the urine. Decapsulation of the kidney has been advanced as a cure for nephritic conditions. The tearing off of the capsule, however, is likely to do more harm than good, since it exposes patients to the danger of infection from whatever bacteria may be present. Not much dependence can be placed on drugs and even such as widen the caliber of the blood vessels or that increase blood pressure and consequently bring more blood to the kidney can be depended on to do good. In these cases the source of the bacteria that find their way into the urine from the kidney and that sometimes cause kidney symptoms is not always easy to determine, but seems to be due to an ascending affection.

Illustrative Cases.—Dr. Green described as his first patient a man who, on attempting to pass a life insurance examination, was rejected because of the presence of albumin and casts. The rejection was not absolute, but the man was told that he could not be accepted unless his urine could be cleared up. The family history was good, though the man himself had suffered from two attacks of gonorrhea. His urine was found to contain colon bacilli in large quantities in almost pure culture. He refused to allow the use of a cystoscope, so the Harris segregator was employed, but it was found that the bacteria came from both kidneys. On a carefully selected diet, especially with laxative effects from plenteous fruit consumption, his urine cleared up somewhat. In a word, when his digestive disturbances improved his urinary condition was also ameliorated. In the man's history there was an attack of severe dysentery during which it was possible that intestinal walls might have become so affected or so adherent that the outward wandering of colon bacilli became possible. The second case was also an insurance case and was refused because of the presence of albumin, though the man's general health was good, his habits were excellent and he led a very regular life. He denied gonorrhea, yet a number of colon bacilli of the ordinary type could be found in his urine. Under medication his urine cleared up to some extent. Such cases are not very rare in the literature at the present time and for the last decade cases have been reported in which a considerable number of bacteria found their way into the urine without there being any definite lesion of the kidney.

Cases from the Literature.—Not long since Nichols collected about 45 cases of bacteriuria, thirty of which were apparently colon bacilli cases. The presence of colon bacilli is nearly always associated with albumin in the urine, though with no other symptoms of kidney trouble, hence the frequency with which such cases are rejected by life insurance companies. In practically all of these cases the use of antiseptics in the intestinal canal does good. In fact this seems to be the only way by which the conditions can be improved.

Transitional Stage in Kidney Pathology.—Dr. Reynold Webb Wilcox said that this consideration of bacteria and albumin in the urine without kidney involvement can not but be valuable. At the present moment one of the great difficulties of the diagnosis of kidney disease is the recognition of the capacity or incapacity of the organ to do its work. At the present time there is a traditional stage in kidney pathology in which the old idea of chronic inflammation in chronic nephritis is being displaced by the notion of degeneration from autointoxication. Chronic interstitial nephritis is very different from acute interstitial nephritis, hence it has come to be considered better to talk of chronic arterial nephritis. When chronic arterial nephritis is present there is no reason *a priori* why decortication of the kidney should do good. There are

many infections of the kidney that are not taken cognizance of in text-books. It is known now that in 20 per cent. of the cases of typhoid fever, typhoid bacilli are found in the urine. While it remains a question whether bacteria may pass through an absolutely uninjured kidney there seems no doubt that in a certain number of these cases at least, some pathological condition is produced.

Segregation of Urine.—Dr. Follen Cabot said that for the collection of urine from either kidney, in order to determine the presence of kidney disease, the Harris or Down segregators are not reliable. Sources of error may constantly occur, but cannot be foreseen, and that may lead to operative procedures not justified by the condition really present. In using the Harris segregator he once made a serious mistake where the affection present was not one of either kidney, but of the bladder.

Ascending Infection.—Dr. Fuller said that many of these anomalous conditions in the urinary tract do not begin from the kidney and go down, but begin in the bladder and ascend. Even when the colon bacillus is the cause of a pathological condition of the kidney the germ has usually found its way from the colon into the bladder and thence up to the kidney. Good drainage of the bladder therefore is the best possible prophylaxis of further damage to the urinary tract. When women are suffering from uterine troubles it is possible that germs from the interior of the uterus may find their way into the bladder because of certain anomalous or acquired lymphatic connections between the two organs. Experimentally it was shown a few years ago that when germs are injected into tissues surrounding the bladder, they succeed in finding their way into the bladder in a few hours. This is true if the bacteria succeed in getting into the peritoneum at all. It is probable that in many cases of intestinal disease followed by adhesions a passage of germs from the intestine to the bladder is not impossible.

Dr. Spooner said that there is a larger number of these cases of bacteriuria than has formerly been thought. They are often the cases of pseudonephritis in which the discovery of albumin in the urine leads to the diagnosis of Bright's disease, yet, with reasonable care, the patient lives on for many years, without serious derangement of health.

Frequency of Bacteriuria.—Dr. James J. Walsh said that it is very evident now from the literature of the subject that even virulent bacteria may pass through a healthy kidney without producing serious damage to the kidney structure. Even in such mild affections as a felon or in small abscesses staphylococci find their way into the circulation and thence through the kidney into the bladder. Recent reports with regard to typhoid fever seem to show that in about one-half the cases bacteria occur in the urine and continue to be found there sometimes for many weeks or even several months after convalescence has been established. Whenever there have been severe affections of the intestine, especially if these have been followed by adhesions in the neighborhood of the bladder, bacteria find their way through the intestinal and then the bladder walls of the urine.

Kidney Decortication.—Dr. Walsh said that while in theory the stripping of the capsule from the kidney seemed rather to be contraindicated than recommended, a certain number of cases had been reported in which there was no doubt that good had been done. From the cases so far collated it would seem that especially in young persons suffering from the effects of nephritis following scarlet fever or some of the infectious diseases of childhood was improvement likely to take place.

Ubiquity of Colon Bacillus.—Dr. Frank H. Daniels said that the colon bacillus seems to occur in many parts of the human system. They are natural inhabitants of the colon, but scarcely any organ fails to be visited by them. They are very common in the bladder, they are often found in the biliary passages and in the gall-bladder; they have been found in the pancreatic duct and, in Dr. Daniels' own experience, have been known to occur in the mouth. Just how they got there is not easy to say. It impresses the necessity, however, for great care of cleanliness whenever patients are suffering any affection of the intestinal tract.

Dr. Green, in closing the discussion, said that he is not an advocate of the Harris segregator and he used the apparatus only because his patient refused to have his kidneys catheterized by any of the ordinary methods with the cystoscope. He has, however, often found the use of the urinary segregator of great importance and one of its decided advantages is that it causes no pain. After all, many sensitive individuals are utterly unable to bear the discomfort of having a catheter inserted and then allowed to remain for some time and not infrequently the use of the urinary segregator is sufficient for the diagnostic purposes intended. In the cases under discussion those of bacteriuria, it is not often necessary to secure urine from the separate kidneys, as the affection causing the presence of the bacteria extends to both sides of the urinary tract as a rule, or else is confined to the bladder itself.

Officers.—The election of officers for the ensuing year then took place. Dr. Augustus S. Knight being elected President; Dr. J. Hilton Waterman was re-elected Secretary, and Dr. Joseph H. Kenefick was re-elected Treasurer.

JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Stated Meeting, held March 7, 1904.

Arthritis Deformans.—Dr. McCrae exhibited three medical cases. The first was a patient showing the early acute stage of arthritis deformans which in the Johns Hopkins Hospital is thought, in all probability, to be an infectious disease—its late manifestations being too often considered, and its early non-degenerative form being overlooked. Patient was a man of twenty-one years, in perfect health and with good previous history. In December, 1903, he had first noticed creaking and slight pain in the knee. There was also some pain and disability in the other knee, the ankles, the shoulder and the fingers. General health was excellent and most of the joints cleared up leaving behind a somewhat thickened capsule, slight creaking and a little restriction of motion. At present the right knee is the only joint much involved showing fulness, creaking and a thickening of the capsule. The ankle and shoulder, however, are somewhat affected. There is general glandular enlargement, with enlargement of the spleen, increase in the reflexes, normal blood count and no temperature. X-ray picture shows no bone changes. The condition was thought to be probably infectious or at least the result of an infection and probably identical with the disease described by Still. The cases of arthritis deformans studied in the Johns Hopkins Hospital form a complete series according to the age of the patients. In the young cases the glands and spleen are often enlarged and in these patients a diagnosis of Still's disease is made. With increase in age glandular enlargement becomes less marked and we gradually approach the typical arthritis deformans of adults. The disease is, however, the same condition throughout, its manifestations being somewhat altered by the age of the patient. The prognosis of these cases varies. Some of the pa-

tients get entirely well, but in others the disease is recurrent and in many becomes chronic. Two theories as to the nature of arthritis deformans have been advanced, one regarding it as a specific infection and the other as a joint involvement following other varied infections (gonorrhea, influenza, etc.). Certainly in these patients the joint troubles are stirred up by subsequent infections. The question of the local treatment of the joint involved is a most important one, and the value of a good functioning knee joint makes it doubly important in cases where that joint is involved. Arthrotomy and irrigation seem wise procedures and, if a villous arthritis is found, the superabundant tissue can be removed surgically. The important point to remember in connection with this case Dr. McCrae thought to be the fact that the acute stage is so often either overlooked or confused with rheumatism.

Tumor of the Parotid Gland.—Dr. Cole showed this case. There was a distinct luetic history, and five years previously tuberculous glands had been removed from both sides of the neck. A pleurisy eight weeks before admission and a few crackling râles pointed to possible tuberculous condition in the chest. In the parotid region there was a fluctuating superficial swelling which had first appeared without pain six weeks ago. A dram of pus was withdrawn, but no tubercle bacilli were found and cultures were negative. The history of tuberculosis, however, and the clinical characters of the swelling pointed to its probable tuberculous character, though the guinea pig injection had not positively decided the question. Tuberculosis of the parotid is a very rare condition. Certain organs in the body seem to be immune to this infection, the salivary glands being very rarely affected in spite of the fact that the lymph glands are so often involved.

Eosinophiles During Experimental Trichinous Infection.—Dr. Opie read this paper. The eosinophiles were known long before Ehrlich, but the granules were thought to be fat. They occur in all mammals and are always less in number than the neutrophilic cells. The ordinary leucocytosis is well understood, but eosinophilic leucocytosis has never been well worked out. Dr. Opie infected guinea pigs with trichinous meat and found that the eosinophiles showed no change until the tenth or twelfth day and then gradually increased till the twenty-first day. The polynuclears also increased for a time. When a great number of trichinæ were used the weight of the animal fell. Just before death there is a rapid decrease in the eosinophiles. The question of the relation between the blood cells and the course of the embryos in the body is an interesting one. In the mucosa of the intestines there is no definite increase in the eosinophiles, nor is there an accumulation anywhere else except in the lymph glands and in the lungs. In the bone-marrow of animals dead of this disease the fat is found much diminished and the narrow cells increased. This is particularly true of the eosinophiles and the increase affects chiefly the myelocytes. This corresponds to the "leucoblastic marrow" seen in human beings. When the trichinous infection is large, destruction of the eosinophiles is seen and the effects of this parasite, as seen in Dr. Opie's experiments, suggests the work of some soluble toxine.

Chemical Origin of the Leucocyte in Leucemia.—Dr. Schmoll reported his investigations on this subject. The blood was studied with the patient on various diets and it was found that food rich in albumin increases the number of leucocytes, the kind of albumin being apparently indifferent. The conclusion was drawn that the body is capable of extracting nuclein from the ingested food and that the increase of phosphorus is an important factor.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

Section on Clinical Medicine.

Stated Meeting, held March 4, 1904.

Tracheal Tumors.—Dr. Rosenheim read this paper, reporting a case which had occurred in the surgical wards of the Johns Hopkins Hospital. The condition is a rare one, of 3,120 tumors reported in the upper respiratory tract only 7 occurring in the trachea. This lack of susceptibility of the trachea to new growths is probably due to its functional passivity. Dr. Rosenheim's patient was a woman aged twenty-three years who complained of difficulty in breathing. Nine months before admission she first noticed a heavy, choking sensation in the air passages, and cough, dyspnea and slight expectoration soon appeared. Cough without expectoration was present on admission, no glands were palpable and heart and lungs were negative. Laryngoscopic examination showed normal larynx and vocal cords; but just below the cords was a small, red, smooth tumor which did not move with respiration or phonation. Operation was done by Dr. Halsted. A preliminary tracheotomy being the first step in the procedure. The tumor was found opposite the cricoid cartilage and the upper tracheal rings. The patient stopped breathing during the operation but anal dilatation was successful in stimulating respiration. Recovery was uneventful and the patient was perfectly well six months later. The tumor was capsulated, contained mucoid fluid; on section it showed trabeculæ with colloid in the intertrabecular spaces. Pathologically the diagnosis was colloid fibroadenoma.

Tracheal tumors are clinically all alike. They were first seen laryngoscopically by Turck. Of the benign neoplasms all types occur—papillomata, fibromata and chondromata being the most frequent. Carcinoma and sarcoma are the types of malignancy most often met with. On the posterior wall of the upper and lower portions of the trachea tumors are most frequently seen. Of the infectious granulomata lues is the most frequent form; but tuberculous tumors are also sometimes seen. Another type of tumor in this region consists of the proliferations which occasionally occur after tracheotomies. Thyroid tumors are not unusual, are seen most often in women and consist of typical glandular tissue. Bruns and others hold that they represent merely an embryonic misplacement; but Ziemssen claims that they are due to thyroid proliferation and actual in growth involving the trachea. The symptoms of tracheal tumor only occur when stenosis is present. Dyspnea is first to appear. Then comes enfeebling of the voice with hoarseness. Lung changes (bronchiectasis, bronchitis, atelectasis) may occur. The diagnosis is positively made by laryngoscopic or tracheoscopic examination; but, excluding esophageal and thyroid tumor, a husky voice is most suspicious, provided there be no aortic aneurism. The nature of the tumor is practically impossible to be sure about. Prognosis is, without operation, most unfavorable. The tumor may be removed by laryngotracheotomy or by endotracheotomy.

Hysterical Paralysis in Men.—Dr. Thomas reported two cases of this affection. Hysteria, on account of its frequency in women, is easily overlooked in the opposite sex; but it does occur and with some frequency. The first patient was a farmer and banker, who had led a more or less sedentary life since his eighteenth year. He had always been bothered by constipation with occasional attacks of abdominal pain and vomiting, which he attributed to nervous dyspepsia. For this he was treated at the Johns Hopkins Hospital and was discharged well. He was in the next few months somewhat overworked and suffered three severe nervous

attacks. A little later he was taken with pain in the left side, diagnosed pleurisy. He became well from this attack, but his body was afterward drawn over to the left side. Soon after an area of numbness appeared in the left hip, the left leg began to drag, and a fourth nervous attack supervened. Patient was admitted with pain in the left side, subjective numbness, paralysis of left leg below the knee. On the inside of dorsum of foot there was an area where touch and pain sensations were diminished (pressure on the sciatic nerve was thought of, but the anesthesia was on the wrong side of the foot). Reflexes were normal, and the foot was held up when electricity was applied and the current shut off without the patient's knowledge. He walked dragging his toe. Treatment was electrical and psychical, and the patient soon got perfectly well. The second case was a young man of twenty years, who, while romping one evening, received a slight injury to his arm with a good deal of shock. A large amount of whisky was given to treat the shock; and the following day there was great pain in the right arm, absolute paralysis appearing twenty-four hours later. An injury to the brachial plexus was of course diagnosed. When first seen by Dr. Thomas, patient showed absolute powerlessness of the arm with complete anesthesia to pain, touch and temperature extending to the wrist where it ended sharply. Muscular sense was wanting in the same area. Paralysis affected the shoulder and arm, but there was slight movement of the fingers. Reflexes and electrical reactions were normal, which, together with the distribution of paralysis and anesthesia, placed organic disease out of the question. Electrical treatment was given. On the second day recovery had occurred as far as the elbow, and on the fourth day patient was perfectly well. In connection with these cases Dr. Thomas referred to the suggestion of one of the European observers that the hysterical stigmata may be due to suggestion, and emphasized the importance of avoiding questions which may give the patient a clue as to what symptoms he *ought* to present.

Dr. Hirschberg said that he had recently seen a case of hysterical mutism in a young man of eighteen years, who had recovered completely in three weeks.

BOOK REVIEWS.

Organic and Physiologic Chemistry. A Manual for Students and Practitioners. By Dr. A. McGlannan, Associate Professor of Physiological Chemistry; Instructor in Clinical Laboratory, College of Physicians and Surgeons, Baltimore. Lea Brothers & Co., New York and Philadelphia.

This is a recent member of the medical Epitome Series of the house of Lea Brothers, and is a most excellent and handy volume. For the beginner such epitomes are often very useful and this is one of the best of the class. It is also serviceable for the old-time graduate who is not quite sure of the differences between a paraffin and an olefine, a fatty acid or an aldehyde. He can find here a short, succinct summary of the principles of organic and physiological chemistry.

Bacteriology of Milk. By Harold Swithinbank, of the Bacteriological Research Laboratory, Denham; and George Newman, M.D., F.R.S.E., D.P.H., Medical Officer of Health of the Metropolitan Borough of Finsbury. E. P. Dutton & Co., New York.

Were one only partly en rapport with the immense importance of the subject of the bacterial flora of milk the suspicion would be engendered that this volume of 604 pages, and encyclopedic in proportions, is not justified; but to the health officer, the practitioner who sees sick children, and those who come in contact with dairy interests, will give a leap of anticipation, that finally this subject, of paramount importance, has been adequately presented.

The hope they will find, we believe, to be fulfilled. The volume is one of the best types of a sanitary exposition of the whole subject of the relation that bacteria bear to milk and the dairy, not to speak of the important consideration given to the problems of milk infections in human pathology.

We welcome this volume, and trust that an appreciative public will render work of this character profitable to both publishers and authors alike. It is largely by such support that our best gifts in medical sanitation have been given, and it is a duty as well as a privilege to encourage the production of work of this enduring and practical type—moreover profit is ample to the purchaser who reads.

General Pathology. By Ernst Ziegler. Translated from the Tenth Revised German Edition and edited by Alfred Scott Warthin, Ph.D., M.D., Professor of Pathology and Director of the Pathological Laboratory in the University of Michigan, Ann Arbor, Michigan. William Wood & Company, New York.

Were it not for the fact that the merits of Ziegler's pathology were so well known to the medical public of this country, we would be inclined to rhapsodize concerning its excellence of form, and generalize upon the philosophical grasp of the subject of pathology, as shown by the author. The subject warrants eulogy, and is deserving of special attention, for, in the new edition, Ziegler is not only translated but interpreted and that means much for the type of work before us. At least eleven editions of Ziegler have come from the Fischer Verlag, and this is, if the reviewer remembers aright, the third English presentation.

We are firmly of the opinion that this type of work should be in every student's laboratory, and every progressive physician's library. Details may change, but the large outlines of pathology, as drawn by Ziegler, will not be materially modified for some time, and the wealth of bibliography will render such a work one of invaluable aid. The publishers have done their part in aiding Dr. Warthin's interpretation.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Infant Feeding in its Relation to Health and Disease. By Dr. Louis Fischer. Third edition. 8vo, 358 pages. F. A. Davis Co., Philadelphia.

Clinical Lectures on the Nervous System. By Sir Wm. Gowers. Second series. 8vo, 250 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

The Treatment of Fractures. By Dr. C. L. Scudder. Fourth edition. 8vo, 534 pages. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.

Modern Surgery, General and Operative. By Dr. J. C. DaCosta. Fourth edition. 8vo, 1,000 pages. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.

A Laboratory Manual of Physiological and Pathological Chemistry. By Dr. E. Salkowsky. Translated by Dr. W. R. Orndorff. 8vo, 263 pages. Illustrated. John Wiley & Sons, New York.

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ORIGINAL ARTICLES.

TUBERCULOSIS OF THE SPINAL CORD, WITH REPORTS OF CASES OF TUBERCULOUS MYELITIS AND OF TUBERCULOUS PACHYMENINGITIS.

BY CHARLES L. DANA, M.D.,

AND

J. RAMSAY HUNT, M.D.,

OF NEW YORK.

TUBERCULOSIS of the spinal cord occurs in five different ways; (1) as part of a general disseminated tuberculosis; (2) as part of tuberculous cerebrospinal meningitis; (3) as tuberculous tumor; (4) as a tuberculous softening or myelitis; (5) as extradural tuberculosis or tuberculous pachymeningitis with necrosis and edema of the spinal cord.

1. A few miliary tubercles are usually found on the spinal pia in general disseminated tuberculosis, but they have no clinical importance.

2. The same statement applies, as a rule, to the involvement of the cord in ordinary cerebral tuberculous meningitis.

3. Tuberculous tumors stand second in frequency among spinal tumors, but since such tumors are themselves very rare, tubercle of the cord is also a relatively unfamiliar phenomenon.

4. *Tuberculous myelitis* is not yet recognized as a separate pathological process by neuropathologists. At least it is not described by Flatau and Jacobs in their recent six-volume treatise on neuropathology; nor referred to by writers on general pathology. I shall hardly pretend that I am furnishing convincing proof of its existence. Yet the following cases are certainly suggestive of it. I know also that some years ago when tuberculous and chronic organic nervous cases were placed indiscriminately together in the Montefiore Home Dr. B. Sachs and myself several times noted the sudden onset of acute myelitic softening in some of these nervous cases and we independently came to the conclusion that it was due to a tuberculous infection.

Tuberculous meningomyelitis is recognized, but here it is only an extension of the process in the ordinary cases of extradural tuberculosis. In my case it seems that there was a direct infection and infiltration of the cord alone.

Case of Tuberculous Myelitis and Softening of the Spinal Cord.—The patient was a man, aged forty years, who was admitted to Bellevue Hospital, suffering from a progressive amyotrophic lateral sclerosis. This began with symptoms of paralysis and spasm in the tongue, extending thence to the arms, and from there down to the hands. The disease had lasted about six months when the patient developed suddenly a fever, and in a few days a complete paraplegia with some involvement of the arms. He died in the course of a week after these acute symptoms.

Post mortem, the spinal cord was found to be softened from the level of the first dorsal cord to the third cervical segment. There was no apparent tuberculosis found elsewhere, but I cannot say that the examination was very complete. The meninges and vertebræ were normal. The softening was so extensive in the mid-cervical portion that the cord could not be preserved. Beginning at the level of the lower portion of the lesion, that is, the first dorsal segment, there was seen upon transverse section a round white area in the posterior column of the cord. Sections made successively through the dorsal cord showed that this white pultaceous area extended down to about the middle of the fourth dorsal segment of the cord, growing smaller as it extended down. In the first two or three segments of the spinal cord, there was also a superficial softening of the anterior part of the lateral columns of the cord upon the right side. There was absolutely no sign of hemorrhage in the cord when it was examined in its fresh state. Even at the lower point of the white and softened substance, there was no redness or sign of extravasation. The cord was hardened in Müller's fluid, except a small portion which included some of the softened area. It was placed in alcohol, and was examined for me by Dr. H. T. Brooks, of the Post-Graduate laboratory. He found tubercle bacilli in it, and there could be no doubt but that the acute necrotic process which had attacked the cord, was one of tuberculous infiltration and softening. An examination of the spinal cord later, under the microscope, showed also that the necrotic process was not accompanied with any hemorrhagic process, and that there was a little inflammatory reaction. Examination of the affected area showed disintegrated nervous tissue. This case was, therefore, one of progressive amyotrophic lateral sclerosis in the first place. Superimposed upon this was an acute tuberculous infection and also softening of the previously diseased spinal cord. One form of the extension of this softening took the shape of a perforating necrosis, which extended down through the posterior column. A less marked development of this was a superficial necrosis which affected part of the anterior and lateral columns.

This case suggests, to my mind, that the perforating necroses which accompany some severe cases of myelitis or cord degeneration, are really tuberculous phenomena, and not primarily hemorrhagic, although, in some instances, there may be a hemorrhagic process associated with it.*

* The clinical features have been described in detail by Dr. Jos. Collins, American Journal of the Medical Sciences, June, 1896.

5. *Tuberculous pachymeningitis* from caries of the vertebræ, with so-called compression myelitis, is the affection most commonly met with and of most practical importance. When the process extends from the bone to the extradural space, this becomes filled with a tuberculous, caseous, and sometimes purulent, mass, which surrounds the cord; the cord then becomes secondarily affected, and its functions interfered with; and we have the symptoms of "compression myelitis." There is not always, perhaps never, a true mechanical compression of the cord through the bending of the spinal column. The compressing mass, however, interferes with the vascular and lymphatic circulation. As a result, there is sometimes an ischemia and sometimes an edema, or both, with the result that the cord may undergo degeneration and necrotic softening. If the process continues, the parts are destroyed, absorbed in part, and a sclerotic mass is left. The dura, however, usually protects the cord from tuberculous infection and from suppuration, so that the cord process is not usually an inflammation. It is rather a tuberculous pachymeningitis with edema and more or less necrosis of the cord. If the tuberculosis can be arrested by fixing the spine or by surgical measures, the cord repairs itself; and as a result, in even very severe paraplegia from extradural tuberculosis, recovery may occur.

In most cases the compression disturbance seems to affect mostly the motor tracts leading to a spastic paraplegia with some pain, but no marked anesthesia. This is because, as shown in the following case, the lateral columns are especially sensitive to disturbance of nutrition, as is the case with syphilitic meningomyelitis.

In the following case, the necrosis edema, however, affected not only the lateral but the posterior column and central gray matter, leading to dissociation of sensation, such as is seen in syringomyelia and central hemorrhage of the cord.

The peculiar group of sensory symptoms, and the absence of kyphosis, make the case of rather unusual clinical type. The pathological findings show very clearly that the process in the cord lesion was a secondary one, due to the adjacent tuberculosis but not a part of it. The cord was not pressed out of shape, it had not reached a stage of softening, nor did it show any true inflammation change.

The term "compression myelitis" is a convenient one, but it does not indicate the true nature of the change, which should be called a pressure necrosis.

Summary.—Caries of fifth cervical vertebra complicating pulmonary and glandular tuberculosis; external tuberculous pachymeningitis; quadruplegia; dissociated anesthesia. Autopsy. Histological examination: Some necrosis edema; Gower's tracts traced to their decussation in the anterior medullary velum.

J. J., aged twenty-four years; married; negro; laborer; was admitted to the Second Medical Division of Bellevue Hospital, June 4, 1901. No family history bearing on the case could be obtained. Three years before had venereal ulcer of uncertain nature; no secondaries; no internal treatment. In 1899 contracted pneumonia, since then has had cough. On March 15 an exposure to cold was followed by severe pains in the arms, shoulders and back of neck. These pains continued and were very sharp. One month before admission a tumor had appeared in the left axilla.

Physical Examination on Admission.—Well nourished, muscular, slight general adenopathy. Rounded mass in left axilla, firm and painless. At the right apex anteriorly and posteriorly dulness on percussion with bronchial breathing and few moist râles. Temperature 103° F., pulse 84, respirations 20. Otherwise examination negative. Urine normal. Examination of sputum on June 14 and 15 for tubercle bacilli was negative. Leucocytes, 12,800.

June 27. The sharp, shooting pains in the neck and shoulders have continued with diminishing intensity. For several days he has complained of paresthesia in all four extremities with weakness. To-day on waking he found that he could not move his legs or arms. Since admission the temperature has ranged between 101° and 103° F. or 104° F., with a daily remission of from one to two degrees. Pulse and respiration in proportion.

June 29. The head is held slightly forward and fixed in one position. Movements of head such as flexion and rotation are carried out slowly and with difficulty. Lateral flexion is especially restricted and causes pain. A slight blow on the vertex induces severe pain referred to the lower cervical region. The lower cervical spines beginning with the fifth, are quite tender on percussion and also on deep pressure on either side of the spinous processes. This sensitiveness is particularly marked at the fifth cervical vertebra. The shock transmitted from a blow on the feet is felt acutely in the cervical region. No abnormalities in contour. Palpation of the pharynx negative. There is complete paraplegia with the exception of very slight movement of the foot and leg on the right side. The abdomen is distended, the muscles relaxed and powerless. The respirations are purely diaphragmatic. In the arms, movements of the shoulder-joint occur normally, but extension of the elbow-joint is quite lost on the right side and diminished on the left, while flexion is very weak, especially on the right. Extension and flexion of the wrist are so weak as to be scarcely perceptible and there is not a vestige of movement in the fingers. He has perfect control of bladder and rectum. Sexual power is undisturbed. The cranial nerves are normal. The arm-jerks are lost while the knee-jerks are very feeble, occurring only at every fourth or fifth trial. The Achilles-jerks are present on both sides; no ankle clonus; Babinski phenomenon on both sides. The upper and lower extremities are quite flaccid. The tactile and deep sensibility are well-preserved through-

out. There are analgesia and disturbance of the temperature sense extending as high as the second rib anteriorly and the midscapular region posteriorly. The abdominal and cremasteric reflexes are present.

July 6. The enlarged gland was removed from the left axilla and was pronounced, by Dr. Ewing, to be tuberculous.

July 23. Electrical: Strong Faradic currents applied to the paralyzed muscle groups of the arms produce no response, or only a very feeble, slow contraction. The muscles of the leg likewise do not respond to strong Faradic currents with the exception of the right adductor group. The muscles of the neck and face respond promptly. Very slight tactile disturbance (hyperesthesia) over the feet and legs. Pain and temperature senses are as noted above. The deep sensibility, except for slight uncertainty in the toes, is good. The knee-jerks are quite exaggerated; ankle clonus present on both sides; moderate spasticity. Still controls bladder and rectum. Sexual power retained.

Blood examination by Dr. Hastings. Red cells, 4,320,000; white cells, 11,800; hemoglobin, 85 per cent. Differential count. Polynuclear, 83⅓ per cent.; eosinophiles 1 per cent.; large mononuclears 7 per cent.; small mononuclears 8⅔ per cent.

September 19. Considerable edema of the lower extremities and face. Deep decubitus over sacrum. Breaking down of axillary tumor with formation of deep sinuses. The paralysis of motion and sensation and the reflexes remain as at

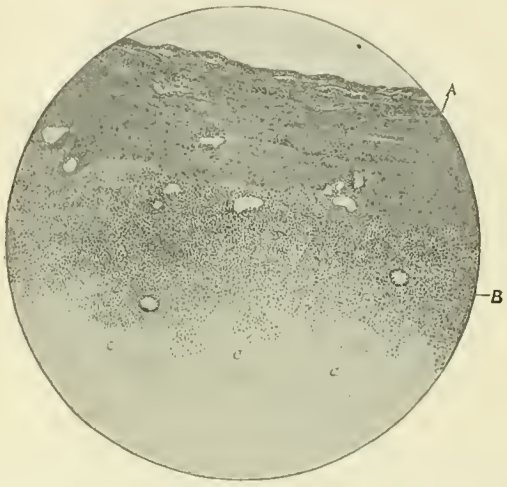
Fig. 1.

Section of fifth cervical segment at point of greatest extradural tuberculosis.

last examination. The sphincters of the bladder and rectum were continent up to the last. Died on September 25, 1901.

Autopsy was performed forty-eight hours after death by Dr. Otto Schultze. Large bedsores on the sacrum, both trochanters and the left scapula. The incision of the soft parts to remove the cord allows the escape of a considerable quantity of cheesy pus corresponding to the fifth, sixth and seventh cervical vertebræ. The muscles are infiltrated and necrotic. Deep sinus in the left axilla undermining and invading the pectorals. On removing the arches of the cervical column a large, cheesy mass was uncovered corresponding to the fifth and sixth cervical vertebræ and encircling the cord in its posterior aspect (Fig. 1).

Fig. 2.



Tuberculous peripachymeningitis. (A) Dura mater; (B) cellular proliferation outer surface of dura; (C) tuberculous mass.

This mass is entirely extradural. Tuberculous abscess formation in the left side of the neck bathing the trachea and esophagus in pus and laying bare the anterior surface of the cervical spine. The body of the fifth cervical vertebra is crumbled and broken down. Fistulous openings into the esophagus in the right side corresponding to caseating lymph glands. Extensive mediastinal and retroperitoneal glandular tuberculosis, large areas of tuberculous caseation and softening in both lungs; general miliary tuberculosis. Parenchymatous degeneration of the kidneys. Tuberculous ulcers in the small intestine. Sero-fibrinous pericarditis. An area of tuberculous caries on the inner aspect of the right frontal bone 3 cm. in diameter. Underlying this is an external tuberculous pachymeningitis. The brain, inner surface of dura and meninges are normal.

Histological Examination.—Transverse section at the site of compression, including the cord and peripachymeningitic exudate proved this to be entirely extradural. It consists largely of homogeneous areas of necrosis at the borders of which are dense accumulations of round cells including epithelioid and giant cells (Fig. 2). The blood vessels between the layers of the dura are thickened and surrounded by round cells. On the internal surface of the dura mater corresponding in extent to the peripachymeningitis, is a proliferation of endothelial cells. The adjacent endothelial cells of the arachnoid also participate. The walls of the anterior and posterior spinal arteries are normal; the lumen patulous.

The anterior roots are free. The posterior roots are the seat of extensive round cell infiltration and proliferation, compressing and obliterating the nerve elements. The gray and white matter of the cord contain numerous vacuoles and clefts, more numerous in the white than in the gray matter (Fig. 3). All the intramedullary

Fig. 3.

Tuberculous necrosis edema of cervical cord. Section shows an area of lateral column, the nerve fibers have almost entirely disappeared.

vessels are thickened and surrounded by round and spindle cells. The large multipolar cells of the anterior horns show marked changes; chromatolysis, peripheral dislocation of the nucleus, swelling of the nucleolus, hyaline degenerations, rounded and broken processes. Some few cells are normal. The anterior horn cells at other levels of the cord are normal. Above and below the site of lesion the usual secondary degenerations—ascending and descending—were followed by the Marchi method.

Remarks.—The interesting features of the case are as follows: The acute onset after exposure to cold; the three months' duration of the lancinating pains without other symptoms referable to the spine or nervous system, which, in view of the histological examination, were caused by infiltration and compression of the posterior roots; the very acute onset of the paralysis; the dissociated anesthesia with complete paralysis of motion which suggested the existence of a central lesion of the cord. The diminution of the knee-jerks at first followed by great exaggeration, spasticity and clonus, was probably caused by the shock of the acute onset.

The spinal cord nerve fibers showed swelling of myelin sheath and absent or swollen axis cylinders. Often the fiber is entirely gone, leaving only a vacuole (Fig. 3).

The dissociation of sensation is not explained by any distinct focus of central softening. The lesion of the cord substance seemed indeed most marked in the lateral columns and in the neighborhood of the posterior roots. This latter disturbance would not explain, however, the sensory disturbance in the lower limbs, and it must be inferred that the necrosis edema, by affecting partially the posterior columns and partly the ascending (Gower's) tract of the lateral columns, was the cause of this peculiar clinical symptom. The very distinct degeneration of Gower's tracts easily followed as far as the level of the corpora quadrigemina would tend to confirm the view that it is along these tracts that pain—temperature sense impulses are carried. No ascending degeneration was to be found in the inferior cerebellar peduncles, and no tracts were seen running in the formatio reticularis.

THE OUTLOOK FOR A MORE SANITARY STREET-CAR SERVICE IN NEW YORK.

BY GEORGE A. SOPER, PH.D.,

OF NEW YORK.

If it be true that the sentiment of the people is the supreme law, there is reason to take a hopeful view of the street-car situation in New York. The people who have long suffered in the densely crowded, unheated and unventilated cars of Manhattan have protested. Men have taken the time from business to stand on the street corners and count the cars and the people riding in them. It has been found that the crowding at midday, at night and on Sundays is approximately equal, and the reason for this has been discovered to be that the companies withdraw their cars as the number of travelers diminishes. The public has surmised that the refusal of the companies to issue transfers at certain points is animated less by a desire to prevent crowding than to increase the number of fares paid. It has been estimated that to run cars without sufficient heat represents a considerable saving in the electricity. To equip the cars with power brakes, to provide long cars with two conductors and to keep the cars clean and sanitary would mean considerable expense. This might be poor business policy for the companies.

Realizing that the interests of the companies are not entirely coincident with those of the public in the matter of comfort and convenience, when improvements which cost money are considered, the public has taken a deliberate stand for reform. The movement has no reference to the underground rapid transit road which is about to be opened. It is everywhere recognized that the carrying capacity of this line will not bring a sufficient relief to wholly remedy the existing conditions of overcrowding, and it will certainly not affect the policy of the surface roads so far as sanitary questions are concerned.

In a paper published in Medical News, April 19, 1902, I reviewed briefly some reasons for believing that the overcrowding of street cars, which was becoming more aggravated day by day in New York, was attended by grave dangers to health. Theoretical, as well as practical, reasons were given at the time to show that sanitation had been a neglected factor in the study of city

transportation, and that conditions existed in the cars of New York City which probably had something to do with the spread of respiratory diseases.

In the last two years health conditions have grown steadily worse. Crowding has increased and the cars have been less adequately heated and ventilated. The only visible improvement has been a slightly better control of the individual spitter. But even here the results are far from satisfactory. There are over thirty lines of horse cars on Manhattan Island, nearly all of which are in a disgracefully filthy, unheated and unventilated state. The condition of the elevated railroad is deplorable, particularly with respect to the stations. Not only are the waiting rooms, stairways and platforms inadequately cared for, but the plumbing connected with the closets, in many cases, greatly in need of repair.

But the odors and dirt of the stations, unpleasant as they are, are insignificant beside the sand-and-sputum messes on the platforms. Far from observing the sanitary ordinances, the public expectorates upon the floors and the company lays down sand for its accommodation. Later, the sand is scattered by the hurrying passengers and its dangerous elements, ground into dust, are scattered by the winds and draughts of passing trains. The sight of the slimy sand is nauseating to thousands who do not know its danger, while to those who understand what it means it is a matter of grave concern. No physician can doubt that the sputum-saturated sand contains the staphylococci and streptococci of suppuration, the bacilli of tuberculosis, the pneumonococci of Friedländer and other dangerous organisms. With respiratory diseases on the increase and pneumonia assuming practically the form of an epidemic, the suppression of this nuisance is a matter of the utmost public importance.

When such conditions are permitted to exist, it is time indeed that the indignation of right-minded people should be aroused.

The public movement for better street-car accommodations is little more than a year old and was the immediate outcome of conditions of overcrowding which had been rapidly approaching a climax. Credit for bringing the subject to a focus belongs to various associations of women, who publicly protested against the repulsive personal contact and frequent secret insult to which women passengers were subjected in the densely crowded cars. Following this initiative several organizations of professional and business men took the matter in hand, and through representations to the companies and by appeals to the authorities of the city and State, sought to alleviate the intolerable conditions.

Complying with a public demand, the State Railroad Commission held public hearings in New York and undertook an investigation of the conditions and their cause and cure.

The hearings partook somewhat of the nature of a suit, wherein the railroad companies were the defendants, and the public, through representatives of business men's organizations, tax payers' associations and health societies, acted as plaintiffs. To each charge of inadequate service the companies replied that the conditions complained of were indeed bad, but that everything was being done to remedy the situation which human skill and experience justified. The companies had the greatest, and practically the only, experts who were competent to pass judgment upon the alleged shortcomings of the companies, and these experts were working assiduously to improve matters. The whole question should be left in the hands of the companies, whose interest it was to carry as many passengers as possible.

The inquiry was not productive of the relief sought. The report of the railroad commission, where it did not wholly concur with the representations of the railway companies, advised changes which were either impracticable or productive of little benefit. With regard to sanitary reforms, the State Railroad Commission distinctly stated that this subject was outside of their jurisdiction. Improvements in the warming and ventilation of cars and in cleaning them, rested entirely with the New York City Department of Health.

Unable to obtain, by direct appeal to the companies or to the State Railroad Commission, the relief which it was believed could reasonably be afforded, organizations of business men, one of which is known as the Merchants' Association of New York, undertook to secure reforms by carrying the subject to the legislature.

Preliminary to the introduction of a bill at Albany, however, the Merchants' Association undertook to gain a better knowledge of the transportation question as it related to improving the surface and elevated railroad services of Manhattan. A committee was formed, with a subdivision on law and one on engineering and sanitation.

The committee on engineering and sanitation was composed of five members, all of whom had had considerable experience in transportation or sanitary problems.

It was realized by the committee at the outset that the problem faced by the railway companies was one of unprecedented scope. Nowhere else had such a vast number of passengers to be accommodated on lines within so small a territory. From computations made from data supplied by a report of the Board of Railroad Commissioners of the State of New York, it was found that about 1,000,000,000 passengers are carried yearly by the surface and elevated lines of Greater New York, which is about one-fifth of the total street railway transportation of the whole United States. The amount of travel per inhabitant has increased greatly within recent years. It is said that in 1853 each inhabitant of New York city used the public conveyances on an average of 13 times a year, while each inhabitant of Manhattan Island now uses the elevated and surface roads on an average of 415 times a year, or 32 times as often.

In studying the transportation problem of New York, the committee on engineering and sanitation undertook to examine into a series of specific questions, and believing that a solution of the most difficult would make the others comparatively easy, the committee directed its attention principally to Manhattan Island. A corps of trained observers and a staff of office assistants were engaged to collect and collate data on the various points under consideration. Many months were spent by the committee in their investigation in New York city, and visits were made to Philadelphia and Boston to observe transit conditions. The formal report of the committee to the Merchants' Association has recently been printed and issued in book form.

The technical work of this committee has shown: That more cars can be put in operation on the surface lines at all hours of the day and night; that the overcrowding which is customary at other than rush hours is caused by the withdrawal of too many cars from the lines; that it lies within the power of the companies to largely increase the car service on all but the most congested streets; that the carrying capacity of the Broadway line could be increased more than 70 per cent. by the substitution of cars having a seating capacity of fifty-two, instead of the average seating capacity of thirty passengers of the closed cars now used; that to guard against accidents power brakes should be substituted for the hand brakes now employed; that the safety of passengers demands that two employees beside the conductor be placed on all cars having a body length of twenty-eight feet or more; that many of the stations of the elevated road are inadequate and out of repair, and should be provided with wider stairs, covered platforms and arrangements for separating the streams of incoming and outgoing passengers.

Among the principal sanitary conclusions arrived at by the committee, the following may be mentioned:

Among the insanitary conditions prevalent are the sand piles used in lieu of spittoons on the elevated railroads. It is impossible to conceive of a greater menace to the public health than these. The sand which is thrown upon the platforms invites and receives infectious material from the lungs and throats of sick persons to an extent which is as dangerous to health as it is disgusting to sight. The expectorated material becomes dried in the sand and is distributed by winds and by travel of passengers through the cars and stations and through the atmosphere of the street below. The sand pile nuisance is the most insanitary condition which calls for attention in connection with the transportation problem in New York City.

A provision of the Sanitary Code requires that the elevated railroad company should provide cuspidors for use on the elevated platforms. The number is now insufficient, and those which are in use are too small. It is desirable that cuspidors of ample size and decent appearance should be provided. Observation shows that where these conveniences are properly supplied they are generally used by the public.

If the spitting ordinance cannot be construed so as to prevent passengers and elevated train men from expectorating into the streets and onto the tracks, it would be desirable to so modify it that this objectionable practice may be forbidden.

Better care of the stations is needed. At present proper attention is lacking in this respect, and the waiting-rooms, closets and platforms are not uniformly maintained in a cleanly or orderly condition. Dirty pails should not be left standing in the waiting-rooms or passageways; dust and dirt from the platforms and stairs should not be swept into the streets. It should be a rule that no dust is to be raised in cleaning. The methods of cleaning which are suitable for the stations, including platforms and stairways, require the use of mops, soft hand brooms and cloths. Stiff brooms should not be used. Sand should never be used anywhere on the station floors, platforms or stairways, unless to guard against slipperiness.

It is recommended that the cars be cleaned more thoroughly. More attention should be given to systematizing this matter, so as to avoid such objectionable practises as the morning running of cars which have been used all night.

The use of cocoa mats on the floors of cars has frequently been condemned. They serve as collecting and propagating places for bacteria, and it is impossible to clean them. Attempts to disinfect such articles, except in large and expensive sterilizers, are useless.

Other objectionable floor coverings include slats or strips of wood permanently fixed to the floor and which cannot be cleaned without the raising of dust, which is objectionable. The floors of the cars should be covered with a smooth, nonporous material, or a grating of non-absorbent material which may be easily removed for cleaning.

The catch-pans, which are located under the tracks to catch drippings, should be regularly and systematically inspected and kept clean. Under the present circumstances, the catch-pans serve not only to collect drippings, but also as reservoirs of filth.

At present the toilet-rooms of the stations are not always clean. In many cases the plumbing is out of order, the closets overflowing and the waste-pipes stopped. It is unnecessary to point out the objectionable nature of these insanitary conditions.

Proper attention to the ventilation of the stations is needed. Better ventilation may be secured by the careful regulation of transoms, windows and ventilating devices, whereby the air may be continually refreshed and unpleasant odors avoided.

The stations should be warmed in winter to a temperature between 55° and 65° F.

It is desirable that the cars of the elevated railroad should be improved with respect to venti-

lation and warming. An advantageous way for improving the air of the cars without drafts is to provide for the introduction of air at a greater number of points. The ventilation is more satisfactory on the elevated roads than on the surface cars, but it is by no means all that could be desired. More air should be admitted and a part of the air should be carried over the heaters, for the double purpose of warming the fresh air and reducing the intensity and concentration of the heat now given off under the seats. There are various means of accomplishing this end. The experiments of the Pennsylvania Railroad Company and a popular device now being employed on the windows of large office buildings furnish excellent illustrations of the practicability of this method.

The temperature of the cars should be more carefully regulated and placed under the control of the conductor of the train, who is best able to judge of the need of adjusting the warming and ventilating apparatus, and he should be properly instructed and held responsible. Under the present circumstances the cars are allowed to become sometimes too warm and frequently too cold. The temperature should not be permitted to fall below 55° F. nor in cold weather to rise above 65° F.

In order to improve the ventilation of the cars of the surface roads, the same recommendation is made which was offered in connection with the cars of the elevated road. The air should be introduced at a greater number of points, and some of it should be permitted to pass over the electric heaters under the seats. Under the present conditions there is not enough fresh air in the cars; there is no systematic ventilation; the employees of the road do not appear to be instructed to follow any rules with respect to ventilation; the temperature is not maintained within proper limits. The committee believes that while there are difficulties in the way of securing satisfactory ventilation, and that perfect results cannot be secured when cars are overcrowded, a very considerable improvement could be secured by systematizing the ventilation and warming. As an aid to ventilation, it is recommended that the transoms in the monitor tops be protected on the outside by guards to prevent the entrance of sudden gusts of wind. The transoms should also be connected and operated by a lever placed at the ends of the car and controlled by the conductor.

The spaces under the seats of horse cars, where now closed, should be opened, so that the dirt and refuse often thrown into the window casings behind the seats may be seen and promptly removed.

The floors and seat coverings of cars should be kept clean. Many of the surface cars at present have fixed slats on the floors and some have cocoa mats.

Wherever the public is subjected to exposure while waiting to take cars at termini or when transferring from one car line to another on the surface roads, suitable shelter should be provided. If physical conditions at those points are such that shelter cannot be provided in close proximity to the tracks, it should be provided in nearby buildings.

The interest shown by the Merchants' Association by no means represents the total effort being made by the people of New York city for improved conditions of transportation. Other organizations, notably the West Side Association, the Taxpayers' Association, the City Club, and some other forces, are at work to bring about improvements which the public feels it has a right to demand of the companies.

So far, the public movement for better street-car accommodations has been characterized by moderation and energy on the part of the people's representatives. The whole public is unanimous in demanding better facilities than can be afforded by any improvements now in sight. Each organization believes that important reforms can be obtained if a firm stand is taken toward the companies, and each is apparently ambitious to be the successful champion of the popular cause. A combination of the various forces at work might be desirable, to make the whole movement more effective, but so far as is known, no attempt at a combination of the various efforts has been made.

THE EARLY DIAGNOSIS OF GENERAL PARESIS.*

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I HAVE been prompted to choose this subject of the "Early Diagnosis of General Paresis" for my paper on this occasion by a number of experiences I have had in the past few months. Experiences, while they may not be uncommon for one who sees a number of cases of paresis each year, still are not so generally known but that they will bear comment.

Protean as are the manifestations of this disease it is not strange that it should often go unrecognized during its early stages yet there is probably no disease in which a failure to make a correct diagnosis is fraught with such manifest dangers not only to the patient but to his family, his friends, or in fact to any one who, not recognizing his condition, may be induced, for instance, to enter into business relations with him. It is during this early period that those unfortunate occurrences are so frequent which might have been prevented if the true condition of the patient had been recognized.

Manifesting itself in its incipiency by symptoms of defective intelligence, lack of judgment, memory defects, and moral obtuseness we frequently see the most pitiful of pictures—a pre-

* Read before the Broome County Medical Society, Binghamton, N. Y.

viously respected citizen, father of a family who occupy an enviable social position become at the height of his career an ardent worshiper at the shrines of Venus and Bacchus. Friends and relatives see nothing in these manifestations but the outcropping of original sin and are distracted by their inability to stay the career of drunkenness and vice upon which their erstwhile respected relative has apparently entered. How many heart aches, how many pangs of anguish, how many blushes of shame could be spared the wife and children of such a man if the family physician did but recognize in these occurrences the symptoms of the onset of a mental disease and could advise them what course to pursue?

An acute attack of maniacal excitement, the delirium of an acute toxic psychosis, are early recognized and even the slowly developing depression of the melancholic, or the gradual change of character of the paranoiac is usually appreciated before any serious harm can come. But here we have a disease, afflicting one when at the very zenith of his physical and mental powers, insidious in its onset yet capable of so changing the character in a few weeks that the previously honest, upright, moral, truth loving, sober citizen becomes the votary of every form of vice, sinks to the depths of drunkenness and debauchery and may even stain his hands in blood. But this is not the worst, all these things would ultimately find their explanation when the disease that was responsible for them came finally to be recognized and in the light of its diagnosis they would be excused. But it so happens that such a man as I have pictured to you is generally the guardian of the family exchequer. When this is the case it almost invariably happens that he wastes considerable amounts of money in his debauchery, becomes involved in unfortunate and ill-advised speculations often at the solicitation of "sharpers" who only too well appreciate his poor judgment and gullibility—and finally, when he was succeeded in hopelessly entangling his business affairs and plunging himself into debt he is committed to an institution and his family only then come to a realization that they are penniless. The pity of it all is that it might have been prevented.

It is because I have had the possibilities just outlined impressed upon me by a number of cases of late that I thought of taking up with you this evening a discussion of the diagnosis of paresis and the signs and symptoms on which such diagnosis depends.

Before starting on a detailed discussion of the separate factors on which a diagnosis of paresis rests I wish to call your attention to the pretty generally diffused misapprehensions regarding it. First, the diagnosis of paresis does not rest primarily upon the mental symptoms. Paresis is a gross organic disease of the brain and its diagnosis must rest in the main upon an appreciation of the physical signs which these changes bring about, particularly in the field of motor disturbances. Second, grandiose delusions of great wealth, power, and strength are in no wise a necessary part of the disease and while the so-called classical type of paresis does present such delusions, still there are excellent reasons for believing that this type is becoming less frequent.

Now to begin with, let us consider first, for convenience, the least important features of paresis for diagnostic purposes, namely the mental symptoms. I have already indicated in a general way what these are. They are symptoms of dementia, gradual, progressive, and uniform failure of the mental powers upon which, it is true, may be engrafted the picture of almost any psychosis but which inevitably and of necessity modify that picture in a way more or less characteristic of the underlying defect. This dementia manifests itself by failure of memory, defective judgment, inability to apply the mind consecutively for any length of time, and failure of the moral sense. The picture from a mental viewpoint is then one of a gradually deepening dementia, correlated with organic changes in the cerebral cortex—to my mind a true organic dementia. If upon this basis of organic dementia there be erected mayhap symptoms of excitement or depression, delusions of a hypochondrial or grandiose nature, multiform hallucinations and illusions, a true delirium, these symptoms may properly be considered as unessential, accidental accompaniments. Developing as they do, however, upon a ground work of dementia we would expect them to manifest themselves differently than would be the case if their foundation had been originally an unimpaired mind. This we find preeminently to be the case. The grandiose paretic is not content with possessing a few paltry thousands but reckons his fortune by quintillions, he has solid gold carriages, harnesses set in precious stones and offers me each morning a fleet of ships to go around the world with, a million dollars and a thousand wives. The depressed paretic has caused the deaths of untold myriads of human beings, the hypochondriacal has no stomach, no bowels, no brains, etc. The delusions are marked by an absurdity which can only result from the defective judgment, and impaired intelligence of dementia.

These advanced conditions of delusional states, however, are not what I desire to particularly call your attention to, I merely wished to illustrate fully what I meant by my statement that the dementia of paresis was the underlying and essential mental symptoms. The demented type, without marked delusions or sensory falsifications is the truly typical variety of the disease and the dementia the basal element of all forms. This dementia may, however, not be apparent, it may be necessary to seek for its manifestations. In the very early stages the outward symptoms may be those of irritability, and an untoward restlessness which may exhibit itself in many ways, as for instance useless business activity, fits of violent rage over trivial annoyances, and slight lapses of memory. If the reasons for all these things be inquired into, however, they will be found inadequate, often puerile.

Let us turn our attention now to the more characteristic physical signs of the disease which may be found in its earliest stages. Of these by far the most important are the oculo-motor and tendon reflex disturbances.

Of the oculo-motor phenomena the pupillary abnormalities are most important. The loss of the light reflex with retention of the reaction to accommodation, the Argyll-Robertson pupil, is one of the most valuable diagnostic signs of beginning paresis, in the absence of tabes, as it frequently occurs very early. Siemerling* in an examination of 9,160 insane persons found this symptom in 1,639 and of this number 1,524 were paretics. A sluggish reaction to light is also sometimes found, a condition which probably is the beginning stage of the Argyll-Robertson pupil. In examining for these conditions care should be taken that movements of accommodation are not mistaken for reactions to light by having the patient fix the gaze upon some object, the pupils should be equally illuminated, and the light should be not too bright, as under these circumstances a sluggish reaction might be masked. Earlier still, Berkley believes, can often be found loss of the consensual light reflex. The consensual reflex consists in the dilatation and contraction of the pupil of one eye when the other is shaded or exposed to direct light. It is quite possible, I believe, that the loss of this reflex is also an earlier stage in the development of the Argyll-Robertson pupil and should always be tested for. This condition is usually found when a sluggish light reflex is present. Lewis† claims that a still earlier symptom than any of these is the loss of the sympathetic reflex (the dilatation of the pupil on stimulating the skin of the neck). 63.6 per cent. of his cases showed this symptom, several of them with normal light reflex both directly and consensually.

Of the tendon reflexes the only one that need be considered is the knee-joint. This may be normal, exaggerated, diminished, or lost on one or both sides. The exaggerated reflex is most common, but I agree with Sommer‡ in his statement that although this is so the absence of the knee-jerk is of much greater diagnostic importance as there are many more causes for its exaggeration other than paresis than there are for its abolition. This sign also, of course, depends for its importance upon the elimination of other possible etiological factors, especially tabes.

If now we find a patient in middle life with Argyll-Robertson pupils and abolished knee-jerks and tabes can be eliminated, we may strongly suspect paresis. If in addition we learn that there has been a great change of character in the individual, if he has become irritable and restless, fails to remember business engagements, is less careful of his personal appearance, and presents, in short, a host of minor mental symptoms which individually mean nothing but in their ensemble speak for mental deterioration, we need not hesitate to be convinced.

It is rare, however, that a diagnosis has to be made from such meager facts. Other signs are usually available. First of these I would call your attention to the speech. The stammering, stumbling, hesitating speech of the advanced case with its syllabic reduplications and omissions and often explosive character is something so characteristic that once heard it is never to be forgotten. But when there exists this amount of trouble the diagnosis is easy. It is in the very early stages that the special defects are often difficult to make out. At this time there may be only a suspicion of the true paretic speech in the slight hesitation and occasional almost unnoticeable defect in a single word. Such patients often say test words such as, hippopotamus, communicability, circumstantiality, perambulator, quite correctly. It would seem that the defect is as yet so slight that the mere effort expended as the result of conscious attention is sufficient to overcome it. In such cases the test words should be combined into sentences to catch the patient unawares as it were. I have a patient now who says test words and phrases perfectly, yet there is a noticeable defect in an occasional word in her ordinary conversation. If she be asked, however, to repeat this word it is done promptly and correctly. If the speech defect is slightly more marked we may notice a slight tremor about the muscles of the mouth which is brought out by a difficult word or by emotional excitement. We should be careful in interpreting this tremor, however, as we find it present in many conditions other than paresis.

Characteristic of paresis, and occasionally but not frequently occurring early in its course, are the so-called paretic seizures. These may vary in severity and character all the way from the light syncopal attacks with pallor and temporary prostration to severe apoplectiform and epileptiform crises. The epileptiform attacks may be of the petit mal or grand mal type and without the history are indistinguishable from true epilepsy. The apoplectiform seizures resemble in every way true apoplexy but the resulting paralysis is less apt to be permanent, in fact it may entirely disappear in a most remarkable fashion in two or three days. Transitory muscular paralyses, not infrequently of the extrinsic eye muscles may, however, occur apart from these seizures. They usually are of short duration and clear up rapidly.

These then are the symptoms we must look for as early manifestations of paresis: Argyll-Robertson pupil, abolished knee-joint, slight speech defect, transient palsies, and paretic seizures accompanied by a gradually progressive mental enfeeblement. The only other early symptom that is diagnostically of importance is optic nerve atrophy but although this is often of early onset it is from its very nature usually overlooked. I have in mind now a case, however, who spent much time during the early stages of his disease in endeavoring to get his vision corrected and

* Cited by Berkley in "A Treatise on Mental Diseases."
† W. Bevans Lewis: "A Text-book of Mental Diseases."
‡ Robert Sommer: "Diagnostik der Geisteskrankheiten."

whose condition was apparently not recognized by any of the men he consulted regarding his eyes.

As a rule our patients come to us with much more marked disturbances than I have outlined. They generally present well-marked speech disturbance, a similar defect in writing marked by tremor, omission and reduplication of syllables and words even to complete illegibility, tremor especially of the facial muscles, muscular weakness, transient or permanent palsies, and maybe a history of seizures, together with a well-marked dementia or possibly the symptoms of a well-developed psychosis. These further symptoms I shall not discuss as the early ones are still all present and the diagnosis is usually easy.

The principal diseases for which paresis may be mistaken in these early stages are tabes, acquired neurasthenia, some one of the pure psychoses, alcoholism, brain tumor, cerebral syphilis and disseminated sclerosis.

The principles of its differentiation from the various psychoses I have indicated already. The presence of the underlying dementia in a person of middle age should make us at once suspicious and if to this condition the physical signs can be added a diagnosis can with certainty be made.

From tabes dorsalis the differentiation is not so easy and in fact there remain a few cases where it is impossible and we must wait for the development of further symptoms. This is due to the fact that in their early stages the physical signs may be identical in the two diseases. When, however, we observe a case in which the tabetic signs are somewhat atypical with for instance preservation of knee-jerks or marked ataxia of the arms we may be suspicious of paresis and if with this condition we find associated evidences of dementia a tentative diagnosis is in order.

In differentiating paresis from acquired neurasthenia the general mental attitude of the patient is of great significance. Whereas the neurasthenic is given to exaggerating his ills, to constantly complaining of his aches and pains and keeps close observation of every change of symptoms, the paretic is usually indifferent or may on the contrary consult a physician under protest and in the firm belief of the uselessness of so doing as he feels so well. This is not invariable, as I have seen paretics well advanced in the disease who were much concerned over their condition. The contrary state of mind, as illustrated by one of my parents, is more common. On her admission I discovered a well-marked left hemiplegia which she actually knew nothing of until I called her attention to it. In addition to this there is in neurasthenia no dementia, no disturbance of speech or writing, no history of seizures, the tendon reflexes are equal and not abolished, the pupils equal, respond to light and accommodation and are more apt to be dilated while in paresis they are frequently unequal and often very much contracted.

From alcoholism the diagnosis is often not so easy. The deterioration of the chronic alcoholic has much in common with the dementia of paresis. Here again we must turn to the physical signs and note carefully the historical facts. Following a long debauch, however, symptoms may arise, which, in the absence of a history, would warrant a diagnosis of paresis—the so-called alcoholic psuedo-paresis. These symptoms disappear, though in a remarkable manner when the alcohol is withdrawn.

Symptoms occasionally develop in the course of brain tumor which closely resemble paresis. The diagnosis must be made on the preeminently focal character of the physical signs in the former disease.

From disseminated sclerosis the differentiation is sometimes difficult. The combination of intention tremor, nystagmus, scanning speech and spasticity will, however, usually leave little room for doubt although some of these cases do ultimately develop the typical signs of paresis.

From cerebral or cerebrospinal syphilis the diagnosis is again quite difficult. If the lesion is a gummatous meningitis the signs are rather of multiple lesions than a diffuse process. If, on the other hand, the disease affects principally the vessels with resulting endarteritis obliterans, thrombosis and softening, the symptoms are focal and convulsions developing afterward constitute a true post-apoplectic epilepsy. Disturbances of speech and writing either are not present or, if they are, do not partake of the nature of a paretic disorder but are true aphasias due to focal lesions. Palsies, if present, are permanent and nocturnal headaches common. Antisyphilitic remedies produce immediate results in many cases.

In discussing the points of differential diagnosis I have not aimed to be exhaustive but rather succint. I have merely taken up the various factors which one should know to make an intelligent diagnosis and only those which the practitioner will find practical and such as are apt to be met with from day to day rather than the unusual and rare. Even if a certain diagnosis in a given case is impossible the presence in more or less degree of one or more of the symptoms outlined may serve to put us on our guard and by a solicitous watchfulness prevent those unfortunate occurrences often the result when the disease goes unrecognized for any length of time.

PULMONARY TUBERCULOSIS AS AN INFECTIOUS DISEASE; ITS EARLY DIAGNOSIS.*

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It is over 100 years now since it began to be suspected that tuberculosis was probably an infectious disease. It is nearly forty years since Villemin proved its infectious nature. For the last twenty-five years its contagiousness has entered as a precious bit of popular hygiene and

* Read at the annual meeting of the New York State Medical Association.

sanitary science into ordinary tradition. All this has been with the happiest results, and to none have they been more welcome than to physicians, yet the members of the medical profession have not yet practically applied the recently acquired knowledge of the disease as one of the group of contagious diseases. With regard to the other diseases of this group, the physician's first question, when called to see a case and when he suspects an infectious disease is, "Have you been exposed to any contagion? Are there cases of contagious disease in the neighborhood?" The most helpful auxiliary in diagnosis is the knowledge that there are other cases of the same kind with which the patient has been in contact.

Since then tuberculosis is a contagious disease this should be the first care of the physician to ascertain whether the patient has been in contact with others suffering from the disease either at home or at school, or at work. Should contagion prove to have been possible, even if there are no definite localizing symptoms of the presence of a contagious disease, the physician takes the pulse and temperature and if these are at all disturbed he does not consider that he is justified in making a negative diagnosis, even though he finds no local symptoms confirmatory of his suspicions. The patient is warned of the possibility of there being an infectious condition present and is asked to take proper precautions as regards rest, diet and due care until there are no further disturbances of pulse or temperature to be found.

It seems to me that these three preliminary subjects, contagion, the pulse and temperature, which appear to demand so much attention in other infectious diseases, should have the same prominence given them in the physician's mind in cases where tuberculosis is suspected.

At the present time we realize better than ever before the necessity for the very early diagnosis of tuberculosis. Incipient cases may be perfectly cured. Initial cases, where the lesions have not become destructive, may be relieved to such an extent and a curative reaction promoted to such a degree that the diseased area may become completely walled off and, with proper precautions, never again give any trouble.

With regard to the first of these, the possibility of contagion, not near enough attention is usually given. As a rule, the patient is asked whether other members of the family are suffering or have suffered from the disease. This seems to countenance the old idea of the heredity of tuberculosis, and the patient's replies are usually framed on this hypothesis with consequent loss of information that might be of service to the physician in many cases. The important question is not whether relatives are suffering from tuberculosis, but whether any of those living in the same house are apparently suffering from the disease. It is not alone the living rooms, however, that are important in this matter, but especially the workrooms. Those employed in factories should be asked whether any of their coworkers are suffering from chronic cough or whether any of those with whom they associate frequently have such an affliction.

In this respect the occupation itself is often of importance. It is well known for instance that laundresses, that is to say, washerwomen, suffer nearly twice as frequently as other working women of the same class in life from tuberculosis, because of the facility with which they contract tuberculosis from infected clothes. Another class of working women, who suffer severely in the same way are scrubwomen, the contagion evidently being attributable to the careless habit of expectoration that still obtains, notwithstanding the crusade in this matter in recent years.

With regard to the other two preliminary matters for observation, the pulse and temperature, it has seemed to many observers that the solution of much of the mystery of very early cases of tuberculosis is contained in them. As soon as a chronic infection develops anywhere in the body there is a disturbance of the pulse. Especially when this infection is due to the tubercle bacillus, the pulse may be disturbed a long while before any sensible variation of temperature is caused by the toxins of the bacteria. It is well known that cold abscesses may not produce any variations of temperature, and yet may be detected by the fact that the patient's pulse rate is usually far from normal and subject to facile and frequent variations for very slight causes.

When a patient comes for diagnosis, in whom there is suspicion of tuberculosis and the pulse is found to run above 90, even when there is no excitement it is more than probable that there is something wrong somewhere in the body. It is well to remember in this respect that insurance companies refuse to take risks on subjects whose pulse is not below ninety at the time of the medical examination. Of course, a single examination may mean nothing in this matter. The only way to obtain definite information is to have the patient keep a daily record of the pulse movement, that is to take the pulse regularly three times a day and after four or five days present the record to his physician.

A rapid pulse tells the tale of a chronic infection in the body sooner than anything else and the presence of a pulse constantly above 85, running above 90 in the afternoons, is of itself a very suspicious circumstance, unless of course it occurs in persons who are known to have a family tendency to rapid pulse. The toxins of the tubercle bacillus absorbed into the system disturb the pulse usually a good while before they cause any disturbance of the temperature. In fact, there are those who insist that there is never any disturbance of the temperature until secondary infection of tuberculous foci has taken place and consequently pyogenic toxins are being absorbed into the system.

With regard to the temperature, however, it is important not to depend on one or two or even three or four observations, especially if those ob-

servations are taken about the same time of day. There is, as is well known, a physiological rhythm of temperature, in every individual, with a difference between the lowest and highest daily temperature of at least a degree and a half, Fahrenheit. While the average daily temperature is about 98.4° F., the morning temperature, that is before eight o'clock, is often 97.5° F., or even lower. The afternoon temperature may be as high as 99° F. No two individuals are exactly in accord in this matter. The variation between lowest and highest should be, however, less than a degree and a half. If an individual presents a daily temperature range of more than a degree and a half, there is probably some fever present. If the variation is more than two degrees it is practically sure that there is a febrile movement in the case.

As was pointed out by a German observer, Dr. Marx, in Professor Brieger's clinic, at the Charite in Berlin, the morning temperature in healthy individuals is not infrequently below 97° F., and consequently the afternoon temperature should not exceed 98.5° F. to be within the normal. There is only one way to decide whether the patient's temperature is abnormal and that is to have a series of observations extending over a number of days, at least three to five. The temperature should be taken before eight in the morning, shortly after noon and about six in the evening. If the daily temperature range proves to be more than a degree and a half then there is ample confirmation for any suspicions that may have been aroused with regard to the presence of tuberculosis in the case. At least, it is sure that there is some factor disturbing the bodily heat regulation and consequently leading to perhaps serious metabolic derangement.

These may seem refinements of diagnosis. No patient who is suffering from the hideous thought that perhaps incipient tuberculosis is already at its ravages will find the request for pulse and temperature observations extending over several days too inconvenient. On the contrary, they will usually appreciate the definite information that is thus afforded their physician with regard to their bodily condition and will not hesitate to be of all the assistance possible in so important a matter.

To have discovered that the pulse and temperature are disturbed and even that the patient has been exposed to tuberculosis, does not definitely settle the diagnosis of pulmonary consumption, but it gives the physician important auxiliary information. Especially are these circumstances strongly corroborative of any suspicions of disease that may exist for other reasons. If the patient has been bothered by a cough that has persisted for some time and has been accompanied by some loss of weight, then there can be very little doubt of the nature of the disease. Knowing the patient's general condition in this way, the preliminary knowledge for a proper appreciation of even very slight physical signs in the lungs is secured.

In older days, physical diagnosis laid much stress on the recognition of cavities in the lungs and of even the size and shape of cavities. Gerhardt's change of note, caused by the diameter of the cavity being greater in the horizontal or the vertical plane with a consequent difference in the form of the cavity if it contains any secretion when the patient's position is changed, was one refinement. Wintrich's change of note, due to the emptying of a cavity containing secretion, was another. Stress is laid on various physical diagnostic signs, which were supposed to differentiate various degrees of degeneration in the lung. Practically all of these rather difficult refinements of physical diagnosis are useless as far as any good to the patient is concerned. If the disease has advanced to the stage of cavity formation, then very little information of any significance as regards treatment or even prognosis can be gathered from even the most careful refinements of physical diagnosis. The progress of the disease depends not on its extent but the individual resistive vitality.

The important consideration is to discover the disease at the earliest possible moment and by warning the patient of its ravages secure his complete cooperation for its cure. Diet and fresh air will, at an early stage of tuberculosis bring about a complete cure of the disease. To wait, however, until percussion will give the definite information in this matter, or until bacilli are discovered in the sputum, is frequently to delay the assurance of diagnosis and consequently put off the careful treatment needed for these cases.

By percussion, as was shown by Oestreich working in Virchow's laboratory, no lesion smaller than a large cherry can be detected. Even for this the lesion must be situated rather close to the surface of the lung. Tubercle bacilli frequently do not appear in the sputum until after extensive consolidation has taken place.

As a matter of fact not rarely tubercle bacilli do not appear in the sputum until there has been a secondary infection of the affected area through the wall of the bronchus. Unless the tuberculous focus is close to the bronchus there may be considerable consolidation before any true tuberculous material finds its way into the bronchial lumen to be expectorated. If possible, the diagnosis must be made before this time. Almost as soon as any consolidation takes place, however, there is a roughening and a lengthening of the expiration in the affected area. This is the first physical sign that can be detected. Alone it is scarcely enough to make the diagnosis of tuberculosis absolute. If there is disturbance of pulse and temperature, however, together with a localized area of prolonged, slightly roughened expiration, then there can be no reasonable doubt of the existence of the tuberculous lesion. There is no need to wait for râles and the crepitant râle which is sometimes depended on as one of the earliest auscultatory symptoms of tuberculosis is not heard in those cases until the tuberculous process has affected the pleura and thus caused

the adventitious sound which is recognized as a râle.

The first part of the lung to be affected is the posterior portion of the apex, as a rule. The left apex is said to be a little bit more frequently affected than the right apex, and the statistics of cured cases of tuberculosis, as seen in the post-mortem room, seem to bear this statement out, but this greater frequency of liability to invasion by tubercle bacilli is not sufficient to make it of the diagnostic importance it sometimes is considered. It is not always the custom to examine the posterior portion of the upper part of the lung. Examinations are made just below, and occasionally above, the clavicle in front, while the more important posterior portion is neglected. When there is no sign beneath the clavicle, differences in the breath sounds are often noted above in the superscapular region.

This portion of the thorax, then, should always be examined with the greatest care. Any difference in the breath sounds is very significant. Another portion of the lung, only affected in anomalous cases, though these occur with sufficient frequency to make it of some importance, is along the lower border of the upper lobe. In order to detect physical signs the examination must be made just above the line connecting the nipples. Too much insistence, however, cannot be placed on the teaching that even the earliest physical signs in tuberculosis cannot be said to represent an incipient stage of the affection, but rather one that is already considerably advanced.

What I would plead for, then, in cases of tuberculosis, is the detailed study of the individual, taking account of all the constitutional symptoms, of the environment of the patient as regards possible tuberculous contagion, so as to recognize the earliest disturbance caused by the presence and growth of the bacillus in the tissues. If cases are detected before physical signs are present to confirm the diagnosis there will always be a doubt as to whether the case was really tuberculous or not; but provided patients get better, improve in general health and survive the danger of tuberculosis, there will be no justifiable criticism of prematurity of diagnosis. Early cases of tuberculosis are comparatively easy to cure; late cases are impossible to cure. The earliest possible detection must be the watch-word of the progressive physician.

PATHOLOGICAL CHANGES IN TISSUE UNDER THE INFLUENCES OF THE X-RAY. *

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The subject of the pathological change in tissue under the influence of the X-ray is one of considerable latitude, and in this article it will be covered only in a general way, as detail must be avoided on account of time. In dealing with this subject in another paper, it was considered under two heads: first, the change observed in normal tissue; second, in abnormal tissue; and the conclusions reached at that time seem to still hold good. That no single form of degeneration alone is characteristic to the X-ray, and the form of degeneration observed depends entirely upon the tissue exposed and the method of X-ray application. Here may be seen the scope of this study and the cause of the great difference of opinion that exists among various authors. In some ways the effects of the X-ray might be compared to fever, as for instance in a case of high fever the first degeneration that usually takes place is a hylogranular, then, if the temperature continues, a fatty change follows, the recovery here depends upon the amount of damage done before the fever subsides. In another case, where the fever is continued for a long time with remission and intermission, we have the more chronic forms of degeneration, such as the amyloid change, etc. The X-ray is capable of the same latitude. Those who have watched an X-ray tube in operation and noticed how the vacuum will change from time to time will wonder how any constant result can be obtained, but the operator after a little practice will be able to judge to a great extent about how much energy a certain lamp is capable of giving under certain circumstances.

Then again, with this wide variance of X-ray energy, we have a still more important irregularity to consider, and that is the tolerance of the X-ray by certain individuals always being on guard for that person who has a frightful susceptibility to unpleasant effects. And what seems still more extraordinary is the fact that a person will tolerate a certain amount of X-ray from one apparatus, while apparently the same amount from another will cause trouble. No doubt this is due to our imperfect methods of measuring the amount of X-ray energy. Some have thought that the so-called "brush effects" have a great deal to do with these unexpected results, but if this is so it seems queer that we have not seen these changes before in other fields, but this subject still needs some careful study.

The effect of the X-ray upon tissue must differ from anything else, for the reason that it penetrates to such a depth, and diverges as it does so; therefore a greater area is covered below than upon the surface, while its energy is only modified by the distance from the source, and the resistance of the intervening tissue. The question of how the X-ray acts, must be overlooked for the time being, unless we accept the explanation that it is an electrochemic disturbance of the ultimate cell elements.

The inflammatory effects of the ray upon the tissues of the body have been termed a "burn," although some objection has been raised to its use, it seems to fill the sense in this instance, just as when used for an ulceration caused by some chemical. This effect may be so slight as to cause only a perceptible reddening of the skin followed by a faint tanning, there is very little

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local disturbance, with no systemic effects. From the work of some German authors in this field it would appear that this process closely resembles sunburn, but the effects are much deeper. In the case of severe burns, the process is unique in itself and differs from all other forms of degeneration and regeneration, although very irregular in its course. The period of incubation may be from a few hours to months, and during this time the patient may complain of severe pain in the affected part, in some instances the pain may be quite severe but intense pain does not necessarily mean a severe burn; in fact what might be termed a mild burn often produces the most discomfort. The general systemic disturbance in these cases are quite as irregular but in a general way follow the course that might be expected from ordinary ulcerations in the affected part. The first observation is that of a surface hyperemia, which is followed in a few days or even longer by a slough which gradually extends over the whole involved area. Its appearance is deceptive, it looks as if it could easily be removed but on the contrary it is quite adherent; however, after a given interval, part by part will separate and, as these pieces are removed the underlying structures have the appearance of healthy granulation tissue, but in a few days another slough will form, this process will sometimes continue for months. The appearance of the slough is like that of a bad scald, it is usually moist but differs from it in the fact that it is extremely hard to remove and will often cause intense pain. The explanation may be this, in the case of a scald the tissue dies en masse and separates en masse, while in the case of the X-ray burn the cell necrosis is only one cell at a time, the living and dead cells are intertwined, no doubt that many of these cells would recover if their nutrition was not impaired by these surrounding dead cells, and, acting like any foreign body, would also cause pain.

When the slough of an X-ray burn is carefully removed it gives the appearance of a highly magnified trabecula or a homelier simile, that of a honey comb. The line of demarcation usually seen in other forms of gangrene are practically never seen here, and even when the ulceration has greatly diminished in size by healing, these sloughs still continue to form. The scars of these burns are curious, in very severe cases where the deeper structures are involved they resemble those from fire, but the surprising fact is that when the ulceration does not go below the superficial structures practically no scar will be formed and in a month or two after the ulceration has healed the skin will be as soft and as pliable as that which surrounds it.

At this point is would be well to call attention to a membranous deposit that forms over moist ulcerated surfaces, when the X-ray is applied over a long interval of short exposures, producing only a slight amount of reaction, from its appearance it would suggest diphtheria, except that it is whiter and not so dense, although when it is removed it leaves a bleeding surface. It closely resembles the slough of a bad burn, only that the membrane is entirely superficial.

As is well known, these X-ray burns are extremely painful in most cases, yet at the same time in some instances the X-ray will relieve pain, even anesthesia of the exposed part has been observed. Several theories have been advanced in explanation of these facts, but so far we have no substantial proof. In the case where anesthesia is produced after X-ray exposures where no pathological process exists, the explanation might be, that there is a temporary degeneration of the terminal nerve filaments which causes an impairment of function. This can hardly be offered as an explanation in the case where the pain is relieved in cancer, yet it will be noticed that if these cases receive too much X-ray treatment they will suffer pain, but of a different character from the pain before treatment. These facts, however, would suggest that the effects of the X-ray must be upon the cell elements in the exposed parts. In other words, when a cancer is being treated and the X-ray is applied in sufficient quantity to relieve pain, there will be very little disturbance of the part; on the other hand, when too much X-ray treatment has been given, an active inflammation follows, which involves outside structures and pain in consequence.

The study of the effects of the X-ray upon tissue microscopically in all instances offered here has been upon pre-existing disease. It has not been my fortune to be able to procure a case of simple burn, and in most instances these cases object to the knife, therefore this study is doubly tedious. Some facts have been brought forward that seem to hold good in normal and abnormal cases, but on the other hand there still exists a great deal of mystery that seems almost impossible to explain; take, for instance, a malignant growth surrounded by healthy tissue, it is exposed to the X-ray and it simply melts away, there is very little disturbance of the surrounding tissue, not only macroscopically but microscopically as well, this is well illustrated by the following cases:

Case I.—Mrs. X., for several years has been suffering from an epithelioma of the face just above the alæ of the nose; it was at the time of treatment about the size of a five-cent piece. A section was taken from the edge of the ulceration just before the first treatment, and the microscope confirmed the clinical diagnosis. X-ray treatments were given three times a week, from an 18-inch coil, on a 110-volt current, at 3 ampères, the vacuum of the tube was about 5 inches, spark gap, the tube being 10 inches from the patient and time of exposure 10 minutes, the fluoroscope showed only a dull shadow of the hand. After the sixteenth treatment another section was removed from the edge of the ulceration, which at this time had healed to about one-third its former size. During the process of healing literally no reaction of the surrounding skin was produced and upon examination of the section very

little difference could be seen except for some slight degeneration of the cells, otherwise it was a typical epithelioma and a few weeks later, after the ulceration had healed, sections showed simply typical scar tissue. About the same observation was made in the case of Mr. S., which will be mentioned later.

Although in the reports of cases there is a wide difference of opinion as to the kind and degree of degeneration, many authors, however, speak of the vascular changes and most of them seem to agree that there is a thickening of the vessels, as was observed in the following case:

Case II.—Mr. P., carpenter, thirty-four years of age, spindle-cell sarcoma of the leg. About five years ago he noticed a small tumor over the tibia about four inches above the malleolus; at first it did not annoy him, but as the tumor grew it became painful. He refused a radical operation, but about three months before he began X-ray treatment, the mass was removed. At that time it was about the size of a split baseball, the wound did not close satisfactorily and recurrence was very rapid. At the time he began X-ray treatment several nodules about the size of marbles existed along the line of a very indurated and excavated scar, which was about 2½ inches long. They offered what would seem to be an ideal case for tissue study and it was the intention at that time to remove these nodules at intervals of every two weeks, but under daily treatment they disappeared in less than three weeks and only one nodule was removed on the ninth day. The X-ray was from a 15-inch coil, 6 storage cells, a Queen tube at about a 4-inch vacuum, the tube was about 10 inches from the patient and each treatment lasted about ten minutes. It should be said here that the ultimate result was not as favorable as might have seemed, for it recurred six months later and the man discontinued treatment. The reason for removing the section before the fourteenth day was due to the great softening and diminution to almost half the original size, there was at this time considerable erythema of the overlying skin. The sections showed considerable cell degeneration with invasion of leucocytes and a thickening of the vessels with deposits on the inner surfaces. The amount of degeneration did not seem to be in accordance with what might be expected. The vascular disturbance here was rather interesting, in a part that was rapidly diminishing, the vessels were thickened and in places were almost closed by cellular deposits, yet in the other cells there was a retrograde metamorphosis. The plugging of the vessels might explain the formation of these gangrenous patches after X-ray exposures, yet if this was the only cause, the degenerating process might be expected to subside sooner than it does, at the same time we should expect other embolic complications, perhaps these cases of pneumonia that have followed X-ray burns are due to this cause.

In another case of epithelioma of the face (Mr. S.) of thirty years' duration, sections were examined from the edges of the wound, the first section was taken after the first treatment and the other about three months later. There was very little difference between the two sections although the ulceration had closed in considerably. But while this was occurring another curious process had developed over certain areas, particularly in the deeper portions, there appeared a quite prolific growth of granulation tissue, of a pinkish color, much the same appearance that this tissue presents around tuberculous sinuses which have just been well washed with peroxide of hydrogen. Microscopical examination simply confirmed the clinical observation.

The examination of three sections from a rapidly degenerating epithelioma of the chin showed very little difference between the different sections. They were taken from the edge of the ulceration, the disease occurring in a man forty-six years of age. The X-ray in this case failed to produce any improvement, in fact it seemed to produce more irritation.

At this point it would be well to consider some of the work that has been done in this field and it will be noticed what a wide variance exists in their summaries.

Sequeira states that two definite effects from the X-rays are observed by the microscopical examination; first, a destruction of the epithelial cell, the nucleus and protoplasm undergoing lysis; in some cells there was a definite fatty change. Second, a stimulation of the connective tissue elements causing the formation of healthy scar tissue. Walker, in sections from a rodent ulcer, healing under the influence, found that a fibromyxomatous degeneration was taking place. Beck found a colloid change in an adenocarcinoma. McCaw found the same change in an epithelioma of the uvula. Ellis summarizes from the microscopic examinations of four cases: First, necrosis of cells and trabeculæ of varying degree. In Case I there was also marked fatty degeneration, fewer areas of lymphocytic infiltration in one case after exposure, about equal numbers in the others, a tendency to occlusion of the vessels by deposits on their inner surfaces, practically entire absence of infiltration by polymorphonuclear leucocytes.

In regard to this last point, Dr. Ellis's observations are rather interesting, from the fact that he has given this point very careful study. Mayou, in contradistinction to the above and like most other observers, found a large number of leucocytes, but differs from most others in the fact that he observed that the vessels were dilated. In another instance of a large tumor that had greatly diminished under the use of the X-ray, no change was noticed that could be attributed to its use.

Stewart, assisted by Nickerson, Wilson and Man, made an exhaustive study of a case of epithelioma of the hand and came to the following conclusions: (1) It is probable that when epitheliomata react favorably to the X-ray treatment that characteristic histological changes will be found; (2) the important early changes are fatty degeneration and vascularization of the epithelial

pearls; (3) leucocytic infiltration and various degeneration processes complete the destruction; (4) bodies indistinguishable from Plimmer's bodies multiply as epithelia degenerate.

When comparing the above results we find them directly opposite to those of Dr. Ellis, and the reason is due to the different clinical methods used in the X-ray treatment. In the case of Dr. Stewart no doubt there was some X-ray reaction, that is, an overaction, while in the cases of Dr. Ellis there was no great amount of reaction. This fact will be noticed in the difference between the cases of Mr. P. and Mrs. X., and Mr. S., and leucocytes might be looked upon to hold the following position: First, that they will be observed where we have an overstimulation of the parts by the X-ray; second, in cases that show no reaction leucocytes will not be observed. Allen, however, concludes that leucocytes are increased in the exposed areas immediately.

Some other points in Stewart's paper need careful attention. He refutes the statement of Unna that epitheliomata never undergo a fatty change, and as to the vascular changes he observes marked evidence of the formation of new blood vessels, noticeably in the centers of the epithelial pearls. His specimens showed no signs of an obliterating endarteritis.

Pernet examined tissue from a case of lupus vulgaris, which six months previous had received about 14 treatments about ten minutes each and given daily. He found the collagium disjointed and to some extent disintegrated, the elastin had been destroyed. The hair follicles and sebaceous glands had also disappeared, while the sweat glands showed surrounding infiltration and degeneration. A large vessel in the subcutaneous stratum showed thickened walls, and in places the upper layer of the corium showed a fibrous change.

From the above observations one would naturally expect considerable disturbance of the normal tissues, when they cover some deep growth that is being treated, especially so in the case of abdominal tumors, yet in many instances have large inoperable masses been treated, until complete absorption has taken place, and with very little disturbance of the overlying skin; no doubt that some change does take place, but it never seems to lead to any grave consequences.

The opinion has been expressed by some that all cases of malignant disease should be treated until considerable reaction is observed, but this intense reaction is not necessary, for in fact, when these cases react favorably to the X-ray they will usually do so with very little disturbance of the surrounding structures and over reaction will only lead to a necrosis of the tissues and the healing process will be delayed while the patient will suffer more pain, in some instances it has been looked upon as the cause of recurrence of the disease. Some operators advise the use of the ray until a severe burn has been produced, with the idea that it will have a good effect in retarding metastasis; this has not proved to be so clinically and when one considers the natural history of these cases, this idea is absolutely lacking in support, when we consider the limited area treated, and then, how early and how distant these metastatic processes have been found in the normal case. Sections from the case of K. G. were made from a nodule under the right axilla, the original scirrhus was of the left breast.

Another false idea exists regarding the prognosis of deep and superficial growths, the last are supposed to be much more amenable to treatment; the fact is, however, it is not the location of the disease but the form. The natural course of a superficial skin carcinoma is often thirty years; commonly fifteen years. Now compare this with the rapid progress of a breast or gastric carcinoma and an entirely different aspect presents itself; in these cases the primary process may be treated with success when a secondary process is discovered, and in rapid succession others follow, until the patient succumbs of exhaustion. Slow-growing deep growths have done well under X-ray treatment, while, on the other hand, rapid-growing superficial growths will often be irritated.

It would be impossible to review in detail all of the different phases of this subject and discuss them, but from what has been given the conclusions might be as follows: First, that no single form of degeneration is alone characteristic to the X-ray, and that the form of degeneration observed depends entirely upon the tissue exposed and the method of X-ray application; second, it would seem that the effect of the X-ray was upon the cell elements in the exposed parts, but why certain normal cells, such as those in hair follicles, etc., should be more susceptible than other tissue is still a question of doubt, but in lieu of the vascular disturbance found by many observers it might be thought that this cause plays an active part.

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A HISTORICAL SKETCH OF SOME OF THE SO-CALLED CURES FOR CONSUMPTION WITH A FEW NOTES ON LATER-DAY TREATMENT.

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The history of the treatment of pulmonary tuberculosis, or phthisis, is most interesting. The symptoms of this disease were recognized by Hippocrates and later, but not so clearly, by Galen. Going back one-hundred and fifty years we find that phthisis was considered a disease of a contagious nature, and, as a prophylactic meas-

ure, the Venetian laws directed the destruction by burning of the clothing and furniture of those dying of this disease. At the same time it was customary for the Sicilians to desert a phthisical patient and after his death to burn his bed and bedclothes, and to thoroughly ventilate and fumigate the apartment in which he lived. Yet Thomas, writing fifty years later, says: "It does not seem probable, however, that pulmonary phthisis is infectious; at least it is not regarded so among us at present, although Morgagni, Van Swirten and, of still later date, Morton were of that opinion."

That the character of the disease was not well understood by these earlier practitioners is evident from the method of treatment outlined and carried out by them. They treated the disease as though it were an *acute inflammation* instead of a chronic one. It is with wonder that we read of the good results obtained under some of the methods advocated. On the other hand, they recognized the value of outdoor life and exercise and advised a residence, during the winter at least, in a mild, dry, equable climate. They realized that only in the early stages of phthisis could they hope to see their efforts at treatment crowned with success, but it leads us to question their idea of incipiency when the diagnosis depended entirely on objective symptoms, no note being made of auscultatory signs. Hemoptysis was guarded against and treated as one of the causes of phthisis. As to its treatment Thomas writes: "The effusion is moderated by a strict observance of the antiphlogistic plan; by carefully avoiding heat and every kind of bodily exertion, by occasionally employing cooling purgatives, such as manna, tamarinds, phosphorated soda, sulphate of potassium, etc., and by making use of a light vegetable diet with refrigerants. As a measure not to be neglected, cold was applied to the genitals, or the feet and even the lower portion of the body was immersed. Sudden sprinkling all over with cold water or even one complete immersion was indulged in at times to stop a hemorrhage. Bleeding was resorted to if the patient "was hot, feverish, youthful and of plethoric habit with a hard jerking pulse." The operation was repeated according to circumstances. Contraindications were "marks of debility and laxity, and blood of dark color." An astringent used considerably in hemorrhages was acetate of lead gr. i-ii. Digitalis, to retard the pulse, "gave a very happy effect." Common salt and opium (for excessive coughing), in small and repeated doses were used, also hyoscyamus. If the patient was in danger of sinking from loss of blood, it was proper to apply a blister to the chest. After recovery and to prevent a return of the hemorrhage, the following regimen was the order: Small bleedings, refrigerant and cooling purgatives, strict adherence to an antiphlogistic regimen, avoiding vigorous exertions of the body, agitations of the mind, etc. Sailing, traveling in very easy carriages, swinging or riding gently on horseback were the proper forms of exercise. Bark of cinchona and chalybeates were given to persons "of lax fiber and delicate habit." These precautions were to be continued "beyond the period at which phthisis proves chiefly fatal which is usually between the nineteenth and thirtieth year."

The antiphlogistic plan, consisting of blood-letting, use of mild purgatives and a spare regimen, was considered the proper line of treatment when tubercles had formed or were about to form, although at this period opinion varied as to the efficacy of blood-letting. Thomas writes: "That blood-letting and the rest of the antiphlogistic plan may formerly have been carried too far in many cases, I readily admit; but certain it is that, for some years past, the opposite system has been carried to an equally hurtful excess." Venesection was believed to produce a resolution of the inflamed tubercles in the early stage, but not in confirmed phthisis. The diet was somewhat restricted according to the stage of the disease, as, for instance, "where the symptoms are but trifling and the patient cannot well refrain from animal food, he may then be allowed such as is of the lightest nature and most easily digested." We can readily see that those in the advanced stages of phthisis were not urged to overload their stomachs with any form of nutrition. Fermented liquors, especially spirited ones, were prohibited. Milk was found a valuable remedy, ass's milk being preferred, "whereas, to produce any effect, it (milk) ought to make a considerable part of the patient's diet. Instead of half an English pint night and morning only, as usually practised by phthisical patients, they ought to take it at least four times a day, eating a little bread with it so as to make it a kind of meal." No doubt at that time it would have been considered abuse of the digestive function to have ordered a patient to drink three or four quarts of milk daily, as is now commonly done. If the milk purged the patient, he was advised to add a little of the powder of prepared crab's claws. Women's milk was supposed to give the best results, but they found it difficult to obtain in sufficient quantity. If cow's milk was too heavy for the patient, the cream was removed. Buttermilk was largely used.

The patient was not allowed to expose himself to cold, because the physicians believed that it never failed to determine a greater quantity of blood to the lungs and other internal parts than was natural. A flannel waistcoat next the skin was recommended, and the patient instructed not to expose himself to the piercing northeast winds. They believed the tubercles to be induced and accelerated in winter and retarded in summer, which was their reason for recommending warm, mild climates for the phthisical during the cold months. They believed in the principle of amusing the mind of the patient and keeping alive the hope of ultimate recovery. With this end in view patients were sent to the hot-wells at Bristol, where, besides the waters, moderate exercises and amusements were indulged in. Some physi-

cians of the time believed the waters of these wells a specific, but to quote Thomas again: "I am decidedly of opinion that at least three-fourths of the cures attributed to all mineral waters ought rather to be placed to the account of a difference of air, exercise, diet, amusement of the mind and regulations productive of a greater temperance, than to any salutary or efficacious properties in the waters themselves." The above opinion, which holds to this day, is well borne out in the study of the advances made in the treatment of consumption from that period down to the present time.

In the advanced stages the patient was prevented from exposing himself out of doors during the winter, but they aimed to keep the temperature of his apartment at 62° or 65° F. To remove inflammation from the lungs or tubercles, blisters were applied and made perpetual by shifting them from the chest to the side and from the side to the chest. Measures that sometimes produce a good effect were issues or setons applied to the side or between the scapulæ. Topical bleeding by leeches and cupping were also practised. Factitious airs were formerly employed as inhalations, but fell into disrepute. Oxygen, considerably diluted, was regarded, in the language of the time, as "a gentle stimulus, which, by invigorating the various parts of the animal body, by communicating the firmness to the solids and energy to the fluids, does frequently obliterate the causes of morbid habits." Earth bathing and stabling with cows were recommended in cases of incipient phthisis. The vapor of spiritus etheri sulphurici dropped into warm water was inhaled "with considerable advantage to the patient." Digitalis purpuræ was held in high regard by some physicians as a new remedy in the treatment of this disease; but one writer remarks, "to speak properly, it is rather the revival of an old remedy long laid aside than a new one." Some considered it a direct sedative, others a powerful stimulant. Many regarded it as a specific.

Among other remedies used were: Hemlock in glandular affections; muriate of barytes in incipient phthisis and scrofula; mercury by a few in America. Emetics were exhibited in the early stages, two or three times a week, and considered to be "one of the most powerful remedies known" and "usually attended with a very happy effect." Cupri sulphas was the favorite remedy together with tartarized antimony and ipecacuanha. Troublesome cough was relieved by demulcents, and opiates only given when there was also restlessness at night. Hyoscyamus and humulus lupulus were employed when opium was contraindicated. Preparations obtained from the common garden lettuce, dried leaves of conium in sulphuric ether, as inhalations, and lichen islandicus were used for coughs, dyspnea, and purulent expectoration, respectively. Such was the treatment for the so-called first stage of phthisis.

For the second and advanced stages the idea was "to counteract, if possible, the effects of the absorbed matter, to mitigate the most distressing symptoms, such as cough, diarrhea, and colliquative sweats, and, lastly, to put the body in as good general health as possible by air, moderate exercises, and a proper course of mild, nutritive diet." Bleeding and purging in this stage, as formerly practised, were held to be improper methods. For frequent pulse and flushing heat caused by hectic fever, digitalis was given; uva ursi was given for the fever; and the use of emetics persisted in as advised for the first stage. Balsam of copaiba, myrrh (held in high esteem), and cinchona bark were variously administered in this stage. It was the prevailing opinion that constant exposure of pulmonary ulcers to the air prevented the healing, whereas, now we firmly believe the opposite to be true. Blisters, issues, and setons were also used in this stage, "to obviate inflammation and divert the matter." For profuse night sweats, seltzer water, mineral acids, and armenian bole were given. Some of the more advanced practitioners of a century ago, considering pulmonary consumption as entirely of a scrofulous nature, disapproved highly of the antiphlogistic plan of bleeding and a spare diet, even in the first stage of the disease, and recommended instead a nutritious diet of shellfish and animal food. The use of conium and sarsa in powder as medicines, warmth in dress by wearing flannels next the skin, heating the patient's rooms to the West Indian point (when he could not resort to a warmer climate), the application of blisters, and the frequent smart riding on horseback by way of exercise were all strongly urged.

In the last paragraph we see the light dawning on the medical men of that day as to the more complete and proper treatment of pulmonary tuberculosis. During the next fifty years we note the gradual acceptance of new and truer methods of treatment, while the old, vicious, and harmful forms were laid aside. Progress was made in diagnosis, the pathology of the disease was more closely studied, and a clearer insight gained as to the causes and course of this malady, which led to a more correct knowledge of the general treatment thereof. Just before the Civil War (1858) there seemed to be two prominent indications in the treatment of phthisis: (1) To prevent the further deposition of tubercles, and (2) to guard the lungs and the system at large against their injurious influence during their progress (Wood). To meet the first indication two objects were aimed at: (1) To correct the predisposition, and (2) to obviate the influences of the causes which excited the predisposition into action.

To correct the predisposition, exercise in the open air was considered by far the best remedy. The exercise was to be taken daily and unremittingly for months or years, and was not to be carried to the point of great fatigue, nor were the rigors of winter to interfere with it, but, properly clad, the patient was to venture out into all weathers. This was only emphasizing the need of air for consumption indicated fifty years be-

fore. "Dr. Joseph Parrish, early in his practice, observed the fatality of the modes of treating phthisis then in vogue as well as their frequently marked effect in hastening the march of the disease, and was induced to throw them all aside and return to the practice recommended by Sydenham, which advocated vigorous exercise and free exposure to the air." The patient was to be properly clothed and, when deemed necessary, the face protected by a veil. In choosing a residence, a place that was dry with a uniform temperature was selected. The interiors of Georgia, Alabama, and Florida were recommended for Americans. Excessive heat as well as excessive cold was to be avoided.

That cold climates were beginning to gain favor at this time is illustrated by the following extract from Wood: "It is a question, which experience must determine, whether the extremely cold, uniform and dry air of our high northern latitudes may not operate more beneficially on the health of persons consumptively disposed than the more relaxing climate of the south." A generous diet and the elimination of stimulant drinks, except in cases of debility, were recommended. Mental influences were to be regarded. Hygienic measures were not to be neglected for medicines, which were considered highly useful at times. Cod-liver oil came into use at this time and stood high in favor. Digitalis lost its position as a specific, but was still used for the rapid, feeble pulse. The bitter tonics were in vogue and iodine was recommended in the first stage. Blood-letting, while still practised, was no longer popular, leeches and blisters being preferred. It was deemed unwise to arrest habitual discharges or to remove long-established external diseases in the phthisical patient; therefore, fistula in ano, hemorrhoids, and external scrofulous tumors were encouraged as safe outlets of the morbid tendencies.

To obviate the effects of the tubercle in the way of cough, demulcents, opium, morphine, hyoscyamus, lactucarium, conium, stramonium, belladonna, and hydrocyanic acid were used. Dyspnea was relieved by compound spirit of ether, asafetida, aromatic spirits of ammonium, tincture lobelia, extract of stramonium, etc.

Hemoptysis.—Blood-letting was not entirely abolished, but was indicated when there was "much general excitement with a strong, full pulse." Cups, leeches, and blisters were used. The patient was kept at rest on a low diet, and such medicines as antimonials, citrate of potassa, niter, and ipecacuanha, with cooling drinks, were administered. Common salt was still given and, as astringents, acetate of lead, kino, rhatany or tannic acid combined with opium, and ipecacuanha in minute doses. Issues, setons, and pustulation with tartar emetic were less favorably regarded.

For the bronchial inflammation, tartar emetic, ipecacuanha, sanguinaria, or lobelia in small doses was advised in the early stage. In the advanced stages, they prescribed the more stimulating expectorants as the balsams, turpentines, copaiba, ammoniac, asafetida, and carbonate of ammonia; and for excessive expectoration, creosote, pyroacetic spirit, tar water, petroleum, and Barbadoes tar. Certain inhalations were in vogue for the second stage; volatile matters, as tar vapor, turpentine, and the balsams being the most popular, in addition to which trials of chlorine and iodine were made. Laryngeal affections were treated the same as chronic laryngitis. Digitalis at this time was principally employed to control frequent pulse, as were also wild cherry bark, hydrocyanic acid, and cimicifuga. For the colliquative sweats the mineral acids, acetate of lead, alum, tincture of the chloride of iron, etc., were most efficacious.

The use of emetics to cure phthisis had at this time gone out of practice, and efforts were made to prevent the occurrence of both vomiting and diarrhea. Great debility was met with a supporting treatment, although not as vigorous a one as employed to-day. To summarize the methods and remedies that were in use up to that time and either failed or dropped into disuse, we note the following: The use of emetics in the early stages; residence in a miasmatic district; exhalation from oak bark (tanners'); breathing habitually the air of stables in which were cows; inhalations of the various gases; and injections of strong solutions of silver nitrate into the air passages by means of a tube passed through the larynx. It was said that, fortunately for the patient, the majority of the injections probably passed into the alimentary canal instead of the lungs. A noted physician once told me in conversation that he had had a patient who insisted upon receiving what he supposed were intralaryngeal injections, claiming that he derived great benefit thereby. To quiet the patient, the doctor gave these injections directly into the esophagus to the perfect satisfaction of the patient and to the relief of the laryngeal symptoms.

Digitalis and hydrocyanic acid fell from the ranks as specifics, and various other remedies were laid aside. Compression of the chest and even paracentesis to induce collapse of the diseased lung were proposed, but were not practised to any great extent. In 1875, there was an increasing demand that greater attention be paid to the preservation of health and public hygiene. From that day down to our time, various drugs and methods of treatment have seen their rise and fall, while others have been improved and enlarged upon until they are now both popular and useful in combating tuberculosis. The treatment of to-day is not directed mainly at the symptoms and their sequelæ, as in former times, but the effort is made to remove the cause and to limit the further distribution of foci of disease, as well as to endeavor to prevent complications by the entrance of pyogenic microorganisms. Treatment has resolved itself into groups of remedies, most of them being external measures intended to limit the tuberculous process, to destroy or attenuate the virulency of the bacilli, and to promote an

absorption of the inflammatory products or a protective encapsulation and fibrosis of the diseased area. These methods are not to be depended upon alone, but should be regarded as auxiliaries to the first principles, namely, climate, hygiene, and dietetics combined, without which no cure can be effected. Instead of the word "climate" later developments have demonstrated that the term "fresh air" would, perhaps, be more appropriate; for the proportion of those who can afford to seek a prescribed climate to those who are compelled to receive their treatment in the home atmosphere is as 1 to 12 or about 3 per cent. And it is a fact that the fresh air, even of a large city, when obtained in abundance and in conjunction with the other two requisites, hygiene and diet, together with modern methods of treatment, has produced wonderful results. It is only within the past few years that there has been forced upon the professional mind the undeniable fact, that there is no specific climate required or to be found for tuberculars. We all know how notoriously bad, theoretically, the climate of Boston and Eastern Massachusetts is for consumptives, and yet our friends of the "Hub" are rejoicing in the statistics of the past three years, which have shown such marvelously good results in and around that much-abused district. Every practitioner knows from observation that the majority of cured cases of pulmonary tuberculosis have been cured at or near their homes, yet we still find prevalent the belief that would exile from home comforts to unforeseen hardships and discomfort every unfortunate sufferer from the Great White Plague. Perhaps one of the most valuable advancements made in the treatment of this disease is the rapidly increasing tendency to hesitate before exiling the patient, and to ascertain the special climatic requirements of each individual case before recommending a change. For example, a patient with a poorly developed left heart accompanied by tachycardia should never be sent to an elevation above 1,000 feet. Cases presenting large areas of pulmonary involvement can be more successfully treated at sea level, as are cases of phthisis colorado. Then, again, patients suffering from diabetes or kidney complications would lead a more comfortable existence not only at a low altitude but in a comparatively mild temperature. Finally, we have the incipient cases with sound organs other than the slightly damaged lungs, who do well anywhere, but for whom, if possible, it is well to prescribe either a few months' sojourn in the mountains of a cold region, or a long sea voyage.

In considering the present-day methods, it will be as well to mention the medicines intended for internal administration first, and then to enumerate and describe the plans of using the various form of light, electricity, water, serum, intravenous and subcutaneous injections, inhalations, etc. Although there have been recommended a large number of drugs for internal administration, few of them have stood the test of time and given sufficiently good results to warrant continuing their use. Even within the past decade more than forty or fifty different remedies have been used and exploited by the profession, and yet to-day there are scarcely a dozen that are even considered seriously. As far as we know, no drug has the slightest specific action in pulmonary tuberculosis. The usefulness of drugs is, therefore, restricted to symptomatic treatment. Tonics are required in all incipient cases at first, and from time to time in chronic cases of fibroid phthisis. Their name is legion, but only a few have earned a standing in the treatment of this disease. Strychnine still justly heads the list and may be administered advantageously for many months, combined at times with the bitter tonics. Antiseptics are still, and probably will always be, used extensively. Creosote, ichthyol, and cloves seem to have given the best results among the many advocated at various times. Of all the pharmaceutical modifications of creosote, I believe that none has had as strong a hold upon the professional favor as carbonate of guaiacol—eosote, geosote, creosotal and their various fellows having gradually been relegated to the use of a few. In fact, a large number of the profession still consider, and justly so, that Merck's creosote, given in emulsion or in bismuth capsules, is more efficacious than any of its derivatives. Observers are divided in opinion as to the proper dosage of creosote, but probably the majority of those of qualified judgment agree that the minimum dose of fifteen minims and the maximum of thirty-five minims, three times a day, is a safe limit. Creosote, in addition to its antiseptic qualities, is recognized as a more or less stimulant to nutrition. It seems wise to administer it at intervals rather than constantly.

Ichthyol was first exploited as a rival of creosote in Europe, and there its reputation has remained unshaken for a number of years. The best results are obtained from the administration of large doses, and if the drug is given in such form as to pass the stomach undissolved, amounts of thirty grains three times a day, are easily borne, and untoward effects are few. An occasional diarrhea or an attack of vomiting, which is preceded by the taste of ichthyol, may occur. These symptoms quickly subside upon the withdrawal of the drug, and with its resumption the dose which caused the above symptoms can usually be given without further trouble. The improvement is rapid, and within one month, in individual cases, where other beneficial factors were eliminated, there was a gain in weight of eight or ten pounds, and in those patients whose weight had previously and under different surroundings remained stationary for long periods of time. There is improvement in general nutrition, as evidenced in females by return of menstruation. The fever, sweats and cough diminish, the sputum is more easily ejected, is smaller in quantity, and changed in character from greenish-yellow to yellow, finally becoming mucoid and frothy. In some instances expectoration is too

quickly reduced, and patients experience difficulty in raising the sputa. In cases far advanced, those having a cavity with excessive expectoration, when ichthyol acts well, the effect is striking, and it is more than suggestive of the important part played by the secondary infection in tuberculous processes. Ichthyol changes the character from the fetid, decomposed, purulent sputum into that which is mucoid and frothy, ameliorates the symptoms of fever, chills, sweats and general failure of nutrition dependent upon the absorption of pus products, so that it may be said that in such cases ichthyol practically accomplishes drainage, and, what is more important, tends to convert the function of the pyogenic membrane into one which secretes mucus instead of pus. The debilitating effect of pus absorption is put aside, and there is general improvement noted. Ichthyol is one of the few drugs that have earned a permanent standing in the treatment of phthisis. It may be administered in one of two ways: In enteric coated pills containing two or five grains each, or in the form of a glycerole composed of equal parts of crude ichthyol and glycerin, of which mixture the dose would be 5i (representing thirty minims of the drug) three times a day after meals.

Among other drugs used with more or less success and which have retained a permanent position in the armamentarium of the phthisiotherapeutist are kalagua, oil of cloves, and cinnamon. Oil of cloves is administered in doses of five to fifteen minims in capsules every one or two hours, to the point of saturation. It causes less gastric disturbances than would be expected and, in the hands of most observers, has yielded very excellent results in cases of chronic or fibroid phthisis. Cinnamon is administered in doses of five to twenty minims, three times a day, but has not given such favorable results as oil of cloves. Kalagua, a drug about which very little is known except that it is an extract of the leaves of a Japanese plant, is cultivated mostly in South America. Undoubted evidence of its beneficial effect in lupus has been presented from time to time, to the profession, and the form of pulmonary tuberculosis in which it is most useful is that involving small areas, usually subacute in character, but subject to more or less regular exacerbations of all the symptoms. The instant success of antitoxin in the treatment of diphtheria led some investigators to turn their attention to the manufacture of an antitoxin or serum that might act as quickly and as efficiently in antagonizing the tubercle bacillus. The discovery of this bacillus in 1882, by Robert Koch, was the basis upon which they founded their efforts. The first product of importance was given to the profession by Koch, and was a glycerin extract of cultures of tubercle bacilli. This product was received everywhere as a sure specific for pulmonary tuberculosis, though Koch claimed to cure only those cases treated in the incipient and early stages. Its use in all stages of the disease and in too large doses soon brought about a reaction, and tuberculin was practically abandoned as a therapeutic agent while still largely used as a diagnostic one.

The new and modified tuberculin R contains finely pulverized bodies of tubercle bacilli, sterilized by being kept for several hours at a temperature of 100° C. Those observers who favor tuberculin advocate its use only in selected cases, where the focus is small and restricted to a limited area, one apex only being involved; or, if both, then but in the slightest degree. The dose should be regulated by the degree of reactive temperature, and should not be repeated until at least twenty-four hours. A method favored by some is to begin injections of tuberculin R, and, when a tolerance has been established, to substitute old tuberculin.

Following tuberculin came a serum obtained from the horse, this animal being selected as the one most resistant to attacks of the tubercle bacillus. This serum, which is manufactured by the United States Government, is prepared in a manner similar to that followed in obtaining the antitoxin of diphtheria. The idea was to find an immunizing serum, which would prevent a further development of bacilli or tubercles within the pulmonary tract. The process is to immunize a horse by injecting increasing doses of tuberculin or a similar product for several months or a year, after which time the blood is drawn, the clot allowed to settle, and the resulting serum is styled "antitubercle serum." This product, like tuberculin, has produced the best results in the incipient and early stages. The writer has reported 36 incipient cases treated, with 39 per cent. apparently cured, 55 per cent. generally improved, 9 per cent. of which were practically arrested cases. In 42 moderately advanced cases treated in like manner, the bacilli decreased in 30 per cent., weight gained in 61 per cent., and in between 71 per cent. and 85 per cent. a marked improvement of all the other symptoms was shown.

(To be Continued.)

NORMAL LABOR CONSIDERED FROM A SURGICAL STANDPOINT.*

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There is no case of common occurrence, that presents itself to the general practitioner of medicine, which requires all the demands made in a technical surgical procedure, as in an obstetrical case. It matters not how simple the case may be; if your labors are to be rewarded by anything like uniform success, there is required in each and every instance, a thorough knowledge of a perfect surgical technic. In surgical practice, success does not depend so much upon the skill and dexterity of the operator, as upon his ability to prepare his case and the degree to which he is able to make and retain surgical cleanliness.

The object aimed at in all surgery is to pre-

* Read before the Iowa State Medical Society.

vent infection, for it is an apparent fact, that no matter how skilfully a serious operation be made, success depends wholly upon the aseptic manner in which it is conducted, else we would hear the joust, "the operation was a success, but the patient died," but they forget to add, "from infection." This fling of satire could be aptly applied a few years ago, but to-day it reflects discredit, if not criminal neglect. Our labors then in obstetrics should be directed with a view to prevent infection; and this can be successfully accomplished.

When we recall the condition of the uterus immediately after delivery, with its vast bleeding surface, its large area of torn tissue, the gaping, thrombosed placental sinuses, we are at once struck with its similarity to a wound located elsewhere from whatever cause; and the frequently occurring lacerations of the cervix and perineum, when they are present, serve to make the analogy closer. And when we consider the mechanism by which the decidua is normally removed, we readily observe that a choice culture medium is prepared by nature for the reception and propagation of organisms introduced from without.

The later pathological investigations show that the diseased processes affecting surgical wounds and the puerperal genital tract are precisely similar, differing only in a slight degree by the peculiar conditions in each case. Thus we understand that puerperal fever is really puerperal septicemia, and is due to the entrance into the lacerated tract of certain bacteria which are known to have definite pathogenic properties, and right in this connection it might be pertinent to ask, how do these bacteria gain entrance? Are any of them found normally in the genital tract? Does infection always occur from the outside? Can this be prevented in every case?

Formerly it was supposed that the vagina fairly teemed with bacteria, and the theory of auto-infection was advanced, but the later investigations carried on by competent and careful observers show conclusively that the uterus is positively free from pathogenic bacteria, and in a state of health the vagina is equally so. This premise, then, meets the first argument of auto-infection. The studies of Döderlein are conclusive and must carry weight. He found existing in the vagina an anaerobic bacillus which secretes lactic acid, which is antagonistic to staphylococci, and within certain limits destroys them. He infected the vagina of a virgin with large amounts of staphylococcus cultures, and in four days found it free of injected germs. From his investigations, he formulated the following deductions: (1) All pathological secretions containing germs are weakly acid or alkaline. (2) In puerperal women the vaginal bacillus disappears and in its place are found many forms of saprophytes, and the lochial discharge becomes alkaline. (3) When the lochia ceases, the saprophytes disappear, and the vaginal bacillus reappears; the vaginal secretion becoming intensely acid.

Dr. J. Whitredge Williams supports Döderlein's deductions, after continued observation and a study of other investigators. Kronig made two hundred examinations of vaginal secretions, and failed to find pathogenic microorganisms. He attributes the sterility of the vagina to the outward flow of the vaginal secretions. Menge thinks the germicidal action is aided by the anatomical elements of the vagina, and holds that there is a marked leucocytosis due to the irritation of the vaginal wall, and that this is followed by subsequent phagocytosis.

Having sufficiently considered the uterus and vagina, let us inquire into the state of the vulva. Dr. J. Clifton Edgar, of New York, gives us a careful bacteriological study of this region by a series of results found in examining the vulva of pregnant women; of thirty cases examined, he found the staphylococcus eight times; *Staphylococcus aureus* three times; streptococcus once; sterile nineteen; *Bacillus coli communis* none.

This table shows presence of pyogenic bacteria in about 40 per cent. of the cases he examined. This report is very valuable to us, since it gives a clue concerning the location of the infective agents. This has been used in support of the auto-infection theory, but can scarcely be given much importance in that relation, when we consider the fact that the vagina is the only route from the vulva to the uterus. We have also found that the vagina has certain bactericidal powers in health; but we have also seen in the foregoing that in the puerperal state the secretions of the vagina become alkaline, and as the sterility of the canal is dependent upon the acidity of the contents, we find that instead of there being any defense for the culture of pathogenic bacteria, it has become a perfect culture medium for them. Dr. Matthew D. Mann, of Buffalo, ascribes the alkalinity of the secretions after labor to the large amount of blood serum which is poured out, and to the absence of the *Bacillus vaginæ*, which seems to be destroyed after labor.

As another argument against the theory of auto-infection, we might mention the results of douching before and after labor. It would certainly seem that if the vagina contained pyogenic bacteria antiseptic solution of proper strength, would give better results than where the douche is omitted. Just the opposite of this, however, is true as shown by the labors of Leopold. He used the douche faithfully and well in 5,784 cases, and in $17^{6}/_{10}$ per cent. of this number there developed an infection. In another series of cases he confined 4,088 women and without the douche at an time during the puerperium and had infection in but $7^{8}/_{10}$ per cent., or a decrease of nearly 10 per cent. Undoubtedly the greatest argument in this matter is the results obtained by several large hospitals in this country, where great care is given to the patient and surgical cleanliness is thoroughly maintained, and in my opinion these reports conclusively prove the fallibility of the auto-infection theory, because if such a thing as

auto-infection were possible, then these results would be impossible, since a certain proportion of these cases would be infected, notwithstanding the greatest care. Following is the list: Sloan Maternity, no mortality from sepsis since its foundation. New York Maternity, 1,321 cases; no mortality from sepsis. New York Post-Graduate, 850 cases; 1 death from sepsis. New York Polyclinic, 450 cases; no deaths from sepsis. Preston Retreat, 480 cases; no deaths from sepsis. Boston Lying-in Hospital, 2,194 cases; 1 death from sepsis. University Hospital, Philadelphia; no deaths from sepsis in nine years.

The foregoing certainly reflects great credit on these institutions. Especially is the work commendable in those hospitals wherein there has occurred a death from sepsis, and the case was successfully isolated and was not communicated to other patients. This speaks volumes for their aseptic preparation, for it is generally accepted that sepsis is contagious by inoculation, and only rigid preparation can prevent it.

In 1847 Ignatius P. Semmelweis, at that time an assistant in the Lying-in department of the Vienna General Hospital, endeavored to find the cause of the high mortality rate that existed in his service. He was not slow to discover that this high rate was greatest in the Students' Clinic. These men were constantly engaged in dissecting, and at the same time pursued their studies in the Maternity wards, without any special cleansing of their hands. At this time nearly 10 per cent. of all the women confined in this branch of the service died from infection. In the Midwives Clinic the mortality was but about three per cent. Prolonged or complicated labor in the Students' Clinic was invariably fatal, while in the Midwives Clinic, the length of time or the occurrence of complications did not materially increase the death rate. He also noticed that women who had been delivered before admission and even when unattended, escaped infection. About this time one of the professors died from an infection received during dissection, and the symptoms presented by his associate were so similar to those who were dying in his service that he thought it was more than a mere coincidence, and sought the cause. He began by requesting the students to thoroughly wash their hands in chlorine water, and restricting the number of vaginal examinations. This action was promptly followed by a rapid decrease in the mortality rate, and in a very short time the death rate of that service was less than two per cent.

Thus it was that Dr. Semmelweis gave the world the pioneer work in modern obstetric asepsis and antisepsis, although he did not give it this name. His work has been faithfully carried out and enlarged by such men as Holmes, Lister, Tait, Döderlein, Williams, Edgar, and others familiar to all present.

The work done by the earlier men in this line was not well received. The entire profession hooted at the idea advanced by Semmelweis. He was made a target of ridicule and malignant opposition, and, being a sensitive soul, fretted himself insane. He could not stand the criticism advanced after, when he had such ample proof of its authenticity, and curiously enough, he died of an infected wound received during a septic operation, just in time, however, to prevent the humiliation of being committed to an insane asylum.

The honor of advancing these ideas in America belongs largely to Dr. Oliver Wendell Holmes. In 1843 he wrote an article in which he states that "child-bed fever is a contagious affection, and is preventable and owes its origin to either the attendant or nurse." These views were not accepted, and exerted very little, if any influence, at the time. They were rigidly opposed by the eminent men of the times, especially by Meigs and Hodge, of Philadelphia; Meigs declaring that he preferred to believe that puerperal infection was due to the workings of a Providence, which he could understand. It is strange that both Semmelweis and Holmes experienced the same opposition, when each had labored so faithfully and well to serve mankind by robbing it of one of the greatest horrors assailing that sacred state of motherhood. At the meeting where Holmes read his second article, the discussion brought out a torrent of abuse and ridicule and, headed as it was by such men as Hodge and Meigs, it can be readily understood how men of lesser degree ventured opinions furthering the abuse, since they considered the leaders of the discussion paragons of medical learning. The condition then was very much as it is to-day; each man has a certain following. Holmes' reply to them will always be considered a classic, and I feel that I can well afford to take time here to quote it to you. Addressing the Chairman, he said: "I have no wish to express any harsh feeling with regard to the painful subject which has come before us. If there are any so far excited by the story that these dreadful events that they ask for some word of indignant remonstrance to show that science does not turn the hearts of its followers into ice or stone, let me remind them that such words have been uttered by those who speak with an authority I could not claim. It is as a lesson rather than a reproach that I call up the memory of these irreparable errors and wrongs.

"No tongue can tell the heart-breaking calamity they have caused; they have closed the eyes just opened to a new world of love and happiness; they have bowed the strength of manhood into the dust; they have cast the helplessness of infancy into strangers' arms, or bequeathed with less cruelty, the death of its dying parent. There is no tone deep enough for regret, and no voice loud enough for warning. The woman about to become a mother, or with her new-born upon her bosom, should be the object of trembling care and sympathy wherever she bears her tender burden, or stretches her aching limbs. The very outcast of the street has pity on her sister in degradation, when the seal of promised maternity is

impressed upon her. The remorseless vengeance of the law brought down upon its victim by a machinery as certain as destiny, is arrested in its fall at a word which reveals her transient claim for mercy. The solemn prayer of the liturgy singles out her sorrows from the multiple trials of life, to plead for her in the hour of peril. God forbid that any member of the profession to which she trusts her life, doubly precious at that eventful time, should hazard it negligently, unadvisedly or selfishly."

Passing now from the discussion of auto-infection, we will briefly consider the forms and the source and character of the pyogenic bacteria introduced from the outside.

By far the commonest source of infection is produced by the saprophytes. These are organisms developed on decaying matter. They abound in the feces of parturient women, and find culture material in the blood clots, bits of placenta and membranes. They cannot be said to be truly septic in their action; theirs is rather a rôle of decomposition, as they do not at any time enter the circulation, but produce certain toxins, which in turn give rise to certain symptoms. They are mostly of an anaerobic nature, and cannot be cultivated on the ordinary culture media, and no doubt consists of many forms, which as yet have not been identified; hence, the term saprophytes is a general one, and does not signify any certain forms of bacillus.

Their action on the uterus and vagina is equally vague and obscure; many of them are gas producers, and give rise to the frothy and foul-smelling secretion present in these cases. We can well understand how thoroughly Semmelweis conducted his labors in this direction by reviewing an article published by him just before his death, in which he states:

"The bearer of the decomposed animal-organic material is the examining finger, the operating hand, instruments, foul bed-clothes, impure air, sponges, etc. In other words the bearer of the decomposed animal organic material is anything which is soiled by a decomposing animal-organic material and afterward comes in contact with the genitals of these patients."

While these saprophytes then are local in their action, the state of lowered resistance, induced by their presence, makes it a most favorable condition to be followed by a true septic infection, and while the condition of sapremia may be easily controlled, if a true septic condition should develop, then it would become a grave state indeed.

The true pyogenic organisms that cause infection may be briefly summed up as follows: Streptococcus, the usual cause of the fatal and epidemic form, produces no evidences of decomposition, the discharges are much lessened in amount or entirely absent and free from odor, reproduces itself very rapidly, and extends along the lymphatic routes, gains entrance into the peritoneum and gives rise to symptoms of general sepsis. Staphylococcus is usually associated with the streptococcus, thus giving us a mixed infection. The *Staphylococcus aureus* is the usual form observed in the infection of this condition, while the *Staphylococcus albus* and *Staphylococcus citreus* play little or no part in its production. However, it may be well to state in this connection, as Williams has pointed out, that while the streptococci are usually the causative agents in puerperal infection, they are not necessarily the only organisms concerned in its production, it being clearly shown that most of the pus-producing organisms found in wound infection may also be found in puerperal infection. Gonococcus causes a mild infection when found alone and unmixed. Krönig was able to cultivate gonococcus in 50 out of 179 cases, presenting a mild febrile course. None of these cases resulted in death. *Bacillus coli communis* is mild in its action in this location. Vignal states that one decigram of feces contains about twenty million of colon bacilli, and when we consider the close proximity of the parturient canal to the rectum, sometimes bulging by the pressure of the head downward, and the practice of some men to assist the delivery by passing a finger or two into the rectum to make pressure, we can readily understand how obstetrical asepsis can be compromised.

The foregoing are the commonest forms and I will not weary you by a recital of the other bacillus found, further than to merely mention them: Klebs-Löffler, pneumococcus, *Bacillus aerogenes capsulatus* or gas bacillus, and *Bacillus typhosus.*

Thus we have found in the foregoing that the uterus after labor presents exactly the same condition as a surgical wound; that the diseased processes affecting surgical wounds and the puerperal tract are identical; that the uterus and the vagina in the pregnant state are sterile and possess certain bactericidal powers; that the vulva lodges pyogenic organisms; that the vagina with its outward flow acts as a barrier to the introduction of these organisms into the uterus; that these organisms, then, are introduced into the tract from the outside; that any decomposed animal-organic material should be rigidly excluded.

Therefore, we are now ready to take up the study of how these morbid conditions can be prevented, as the consensus of opinion among the men giving this subject the greatest thought, lead us to believe.

If there is anything which the preceding study proves beyond the question of doubt, I certainly believe it is this: In the point of technic, the practice of obstetrics is a surgical procedure. The time to save your patient's life is when you are preparing her for, and during confinement, not after the infection has taken place, for then your efforts will only too often be rewarded by failure and we will hear the refrain of the mournful note sounded by Dr. Holmes in that memorable reply to his cruel critics.

In beginning this crusade against infection, one of the most important necessities is the educa-

tion of the patients to secure their attendant some little time before confinement, in order that the room and the other essential matters of preparation may be attended to in ample time, thus eliminating the danger by hurried preparation.

The room, if one can make a selection, should be light and capable of being freely ventilated, and the bed placed so that this may be accomplished without subjecting the patient to exposure to drafts.

Do not shut out the sunshine. Sunshine is God-given and is valuable. Lots of it, however, goes to waste for the lack of proper appreciation. Sunshine in itself is a bactericide of no mean potency, besides it adds much to the cheerfulness of the lying-in chamber. Arrange the windows so that the direct rays are not in the eyes of either mother or child, but by no means exclude it altogether.

The furniture should be simple and plain; the bed should be arranged so that the attendant can approach the patient from either side; the bed linen should be fresh and clean and a simple hard mattress answers the purpose of confinement best. No feather-bed should be tolerated, as they are animal-organic material, besides being unsanitary.

When the engagement is made sometime previous to the expected time, have the patient secure about two yards of white table oil-cloth; this is to be carbolized at the time of labor, and a blanket or quilt rolled tightly from end to end and pinned in the shape of a horse-shoe and placed transverse the bed, the oil-cloth laid over it, arranging the depression in the quilt so that the hips may rest therein. This will place one of the edges of the folded quilt under the back and prove a very grateful support to the tired back. The other edge of the roll is far enough from the vaginal outlet so as not to interfere with the delivery of the child. The loose ends of the oil-cloth are then gathered into a suitable vessel at the edge of the bed. Thus we have an arrangement that is capable of being made more aseptic than a Kelly or a Morrison pad, and at the same time eliminates the grave danger of carrying infection from one case to another, and another great recommendation is the small expense.

It is well also to instruct the family to have four towels securely wrapped in unbleached muslin, and thoroughly baked in the oven of an ordinary cook-stove for about an hour, then laid away for use during the confinement. This process quite effectively sterilizes them, and wrapped as they are, they will remain so until needed. A couple of washbowls will be required, but in the emergency two ordinary basins will answer the purpose, providing they are clean.

The patient is prepared, when possible, by a thorough bath, rectal enema and catheterization; where it is impossible to attend to the bath, by no means neglect emptying the bladder and especially the rectum, for, should involuntary evacuation of the bowel take place by reason of the pressure exerted by the descending head, the previous preparation counts for nothing, and extreme care will be required to prevent an ensuing sapremia, due to the action of the colon bacillus, hence it is altogether safer to attend to this matter deliberately than to be compelled to meet it in emergency.

The woman should be attired in a fresh clean nightrobe, and this can be rolled or folded up in under her arms, and an old but clean skirt snugly pinned about the patient just above the waist line. Thus after delivery, by the removal of the soiled skirt and our improvised confinement pad, we have our patient in a clean bed, with clean clothing without disturbing the peaceful rest so highly prized after a long and tedious painful labor.

The attendant should be gowned in a white sterile gown which answers the double purpose of preventing his clothing from being soiled, as well as protecting the patient from a possible infection from dust and other material that could arise from contact. It also adds much to the aseptic completeness of his work. I will mention the preliminary vaginal douche, only to condemn it. The studies of Leopold and others so conclusively prove that it is a dangerous procedure, and is only permissible, where, after a bacteriological examination of the vaginal contents or the secretion, is found to contain pyogenic organisms, and right in this connection let us consider the vaginal examination. Just so long as vaginal examinations are made, no matter how carefully we attempted to disinfect our hands, or the vulva, infection will occasionally be met; this is due to the fact that it is a very difficult matter to thoroughly sterilize the hands, together with the fact that the vulva not infrequently harbors pyogenic organisms. It is to be desired, therefore, that we limit the number of vaginal examinations as much as possible. Little is to be gained from the vaginal examination except to determine the degree of dilatation of the cervix, and thus to make an estimate on the probable duration of labor. Leopold has advanced the idea that labor is best conducted by doing away with the vaginal examination altogether, and relying wholly on the external examination, claiming that the position can be determined with greater accuracy than by the vaginal route, and thus eliminating the grave danger of infection by either the finger, or contamination from the vulva. One of the very first precautions taken by Semmelweis, we remember, was to lessen the number of vaginal examinations. The average accoucheur makes altogether too many of the examinations, and I have known men to sit with their finger in the vagina during almost the entire second stage of labor, believing that they materially assist in dilating the cervix; perhaps they do, but the danger they take by infection greatly overbalances the good that they believe they are doing. The external examination has much to commend it. It is perfectly harmless, and can be made as often as desired, and, unlike

vaginal examination, requires no hand disinfection.

There is a great diversity of opinion as to the best methods of hand sterilization. Some men even go so far as to state that the use of antiseptic solutions are of no value whatever. In a very interesting paper on this subject, Dr. Edward R. McGuire, of Buffalo, has given some very practical suggestions regarding the disinfection of the hands, and has faithfully carried out some very convincing experiments. He closes his article by summarizing as follows: (1) Absolute sterility is impossible by any method. (2) Long-continued vigorous mechanical scrubbing frees the skin of the larger numbers of bacilli. (3) The use of the ordinary solutions for antisepsis is questionable, and under usual conditions distinctly harmful. (4) The use of rubber gloves approaches the ideal. Dr. Wm. J. Mayo, of Rochester, Minn., declares that by scrubbing the hands, we destroy the natural protection that has been provided for harboring of the bacilli, and thus make them more in evidence. He advises and uses the mere thorough washing of the hands in a lather of castile soap and does not touch a brush to the surface. Dr. Joseph Price, of Philadelphia, some time ago suggested the use of ordinary mustard flour, used with green soap rubbed into a paste. The water frees the valatile oil of mustard, which is known to be the most effective vegetable antiseptic known. Dr. Roswell Park has added to this the ordinary corn-meal, previously sterilized. This acts as a mechanical aid to the mustard paste and gives it unsurpassed utility, since it is not severe enough to destroy the outer layer of the skin which protects the resident bacilli.

Personally I prefer this to any other method. It does not leave the surface of the skin rough, it is usually found in all households, and it is efficient in obstetrical work. However, it is well to substitute some of the liquid preparations of soap for the green soap. When you carry your soap in a bottle, you cannot get your hands into it to infect it. This cannot be said of the other forms.

Before preceding with the vaginal examination, then, prepare your hands in the manner best suited to your own ideas, since there is no positive means of securing sterility. In emergency of precipitate labor simple washing in ordinary yellow kitchen soap with plenty of hot water is far better than no preparation at all. The vulva should be thoroughly cleansed by the nurse while the attendant is preparing himself. This should be done with every care, remembering that it is the material that is carried in from the outside that produces the unfortunate complications, and the best and easiest way out of the difficulty is to prevent their occurrence. After the hands and vulva are cleansed, I use a gauze pad, with a slit in the center, to protect the vulva while the finger enters the vagina. These pads are made of four thicknesses of gauze, about eight inches square, and are wrapped in packages of eight and sterilized, then carried in my obstetric bag for use. The nurse places one of these bags snugly in the vulva, and the examination is made through the slit in the center. In this way the parturient canal is protected from the usual source of infection so far as the mother is concerned.

After delivery the placenta should be expressed, there being no occasions to introduce the fingers again into the vulva or vagina, and as the route of expulsion is outward there is no danger of infection from that source, unless the hand or fingers are introduced, and this will not be necessary, unless there is an adherent placenta. In that event the entire arm to the elbow should be prepared thoroughly and the placenta removed.

The responsibility does not cease with the termination of labor. Every precaution should be taken to secure a tranquil puerperium. The napkins to receive the flow should be sterile, and clean cloths, which have been boiled and ironed are sufficiently sterilized to answer the purposes, as the flow is outward, and infection is not likely to occur. When it can be arranged it is best to have pads made of absorbent cotton enclosed in layers of gauze; these can be sterilized and after using, destroyed, as the expense is small and it is much more positive and adds to the surgical completeness of the after-treatment.

The care of the child is not less, in proportion, than that of the mother. There are certain responsibilities that will reward the attendant if well and aseptically performed, and the penalty for neglect is correspondingly simple or grave, as the case may be. Of course no obstetric attendant would neglect the eyes of the infant in this age, but there may be temptation to neglect the surgical technic regarding the cord, and grave complications follow neglect here, a case occurring in my own practice will illustrate the danger.

Charles Edgar, a full-term child, and delivered after a very brief labor, no instruments, eyes washed in weak sterile boric solution, and cord dressed with plain sterile gauze, when ten days old had a black movement of the bowels of the consistency of tar. Examination revealed pneumonia of both lungs, temperature 166° F., the umbilicus discharging and bleeding slightly. The umbilical depression was irrigated with a 1 : 2,000 solution of bichloride and dressed with iodoform gauze. The pneumonia treated with a cotton jacket and stimulation, and with lessening of the umbilical discharge the pneumonia subsided. This undoubtedly was a case of septic pneumonia; other phases of umbilical infection may be mentioned such as meningitis, inflammation of the umbilical vessels, peritonitis, osteomyelitis, arthritis, erysipelas and abscesses in the cellular tissue. Thus we see that pyogenic infection of the infant, like infection of the mother, is a preventable disease, and its presence is invariably due to some failure to execute the proper surgical technic in connection with the delivery. The statistics of the Moscow Lying-in Hospital, published by Miller in 1888, show that previous

to the introduction of aseptic and antiseptic methods, from six to eight per cent. of all the infants died from some of the many varieties of infection and that over eighty per cent. of these infections could be traced to the entrance through the umbilicus. Quite in contrast to these figures the Sloan Maternity Hospital, in New York, does not report a single marked case of infection of the infant since its establishment.

From this comparison it will be evident that in the vast majority of cases the occurrence of infection is due to the negligence of either nurse or attendant.

The umbilicus then should be treated like any other fresh wound, and with all the surgical care

The umbilicus, then, should be treated like any that would be given a surgical wound. Their similarity is striking, only differing as to the cause and location. Dry dressing should invariably be used, and this should be positively sterile. There should be no doubt of this and a simple manner of carrying sterile dressings for the cord is to keep a small jar of sterile gauze sponges in the obstetric bag and use them with sterile hands in making the umbilical dressings. Around this can should be wrapped absorbent cotton, but the practice of wrapping absorbent cotton direct from the commercial package is dangerous, and infection following is due to criminal negligence. Should suppuration occur in spite of all precautions, the wound is irrigated with a solution of bichloride in the strength of from 1:2,000 to 1:3,000, then dusted with iodoform and packed with gauze; or, instead of dusting apply the iodoform in the form of gauze, but by no means use both, as the danger from iodoform poisoning is grave and children are peculiarly susceptible to this idiosyncrasy. The ligatures and everything that comes in contact with the abraided surface of the umbilical region should be thoroughly sterilized, and every precaution taken as in the dressing of a wound.

In closing, then, permit me to recapitulate, under the following heads:

1. Success in obstetrics depends wholly upon your ability to secure and retain surgical cleanliness.

2. The same infective agents encountered in surgical practice are the causative agents in producing puerperal complications, and are only successfully combated by the employment of stringent aseptic and antiseptic technic.

3. Refrain from making numerous vaginal examinations, and when done, execute great aseptic care.

4. Do not wait until you are called to the case to make the preparations for confinement.

5. The practice of carrying a confinement pad is dangerous.

6. Sunshine in itself is a valuable germicide; do not exclude it.

7. Unless the vaginal discharge is known to contain pyogenic bacteria the douche is contraindicated.

8. Exert the same surgical technic in dressing the umbilicus that would be demanded in any other fresh wound.

9. Be clean and be sure that you are clean. Take no chances. By so doing you will reap a liberal temporal reward, besides having the serene satisfaction of knowing that you are serving humanity faithfully and well.

RUBBER CUSHIONS FOR GENERAL SURGICAL, GYNECOLOGICAL AND OBSTETRIC USE.

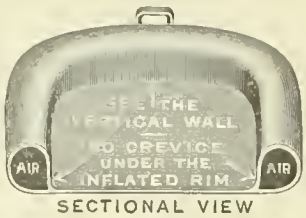
BY HOWARD A. KELLY, M.D.,
OF BALTIMORE, MD.

It is now seventeen years since I first described my Perineal and Ovariotomy drainage cushions (see *American Journal Obstetrics*, 1887, p. 1029); the following year I added a cushion for general surgical purposes (*New York Medical Journal*, April 28, 1888), and again in 1892 (*New York Medical Record*, Dec. 3) I described the obstetric cushion. Since then these simple aids to our surgical technic have proven sufficiently valuable to come into world-wide use, constantly taking the place of specially constructed tables in extemporized operations, and obviating the necessity for attachments to the regular surgical tables by providing effective drainage from the wound area to the receptacle on the floor. They are of constant service in saving the patient's person from being soiled beyond the field of operation, as well as in protecting the under clothing and night dress, and shielding the beds and sheets from contamination.

The cushions in use up to the present date, while affording efficient drainage, have been open to the objection that they are difficult to clean in the narrow recess of the apron under the rounded rim. I sought to meet this difficulty about fifteen years ago by attaching the rubber apron at the middle of the rounded rim, so that the cushion could be used with either side up, and I then had a cushion made after this pattern by a well-known firm dealing in rubber goods in Philadelphia, but it did not prove satisfactory, as it was too shallow, and I abandoned it.

The lingering objection to the earliest styles of

Fig. 1.



SECTIONAL VIEW

drainage cushions has at last been obviated by Meinecke & Company, of New York, manufacturers of advanced specialties for hospitals, by constructing the inner surface of the inflated rim in the form of a vertical wall, which joins the floor of the cushion at a right angle, as indicated by the arrows in sectional cut (Fig. 1). In this

way, while all the depth of the original cushion is kept (and even slightly increased), no part

Fig. 2.

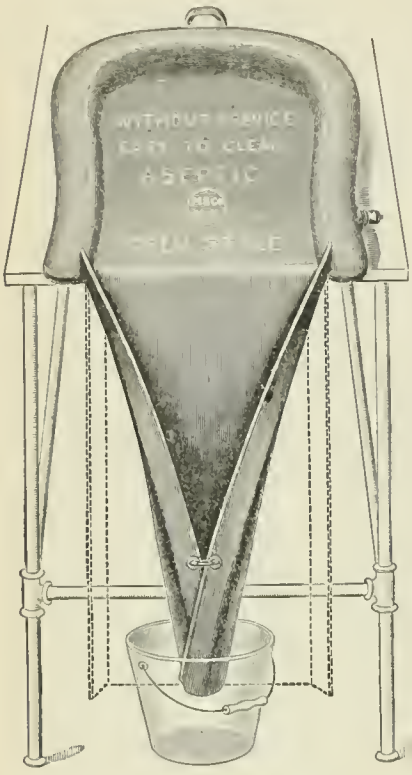


Illustration shows how drainage-apron may be hooked together, thus forming a closed outlet-sleeve. The drainage is thereby carried directly into the receptacle, instead of over the floor and on the operator's clothing.

The dotted lines show how drainage-apron hangs when not hooked together. Notice the gutter or protection, shown by dotted lines, which is formed on each side of the drainage-apron, thus preventing the fluid from running off the sides of apron when used hanging straight down, in the position shown by dotted lines.

Fig. 3.

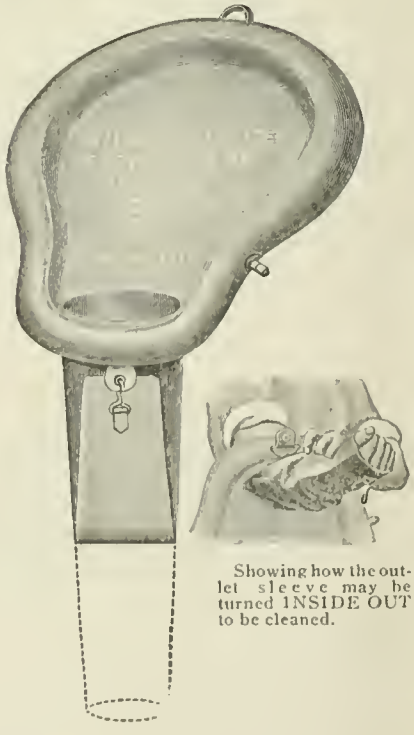


Illustration shows how outlet sleeve may be hooked up, thus forming its own receptacle. This makes a drainage pail unnecessary in operations in which there are less than two quarts of fluid present.

Dotted lines show how outlet-sleeve may lead into drainage pail during operations where there are upward of two quarts of fluid present. The outlet-sleeve is *closed*, like the sleeve of a coat, thus carrying the drainage into the receptacle instead of over the floor and on the operator's clothing.

Showing how the outlet sleeve may be turned INSIDE OUT to be cleaned.

is concealed from view, there is no crevice, and perfect cleanliness is possible.

The small square cushion of this pattern, commonly called "perineal" size, is 15 inches wide; the standard operating size is 20 inches wide, and a large operating size is made 24 inches wide. The 20-inch size is the one most generally used (see Fig. 2).

The obstetric cushion is made with a reversible closed sleeve, which hooks up to the rim in such a manner as to catch amnion, blood and placenta, which collected in this pocket can be transported to the bathroom, weighed and inspected, without the use of any other vessel (see Fig. 3).

In using the cushions for gynecological and general surgery, it is best to lay a sterilized towel between the cushion and the patient. I would also use a sterilized towel or gauze in all obstetric cases. My own practice is to consume from one-half pound to one pound of sterilized absorbent cotton in each obstetric case, unrolling and tearing off a good handful of the cotton at a time, and stuffing it between the buttocks below the vulva. When a wad is saturated or soiled, I drop it into the receptacle formed by the apron and substitute another piece. In this way the patient is kept clean throughout. A proper use of the obstetric pad quite does away with the customary washwoman's tax (sometimes as much as $5.00 for a single wash), which she often levies for handling the soiled linen after the arrival of a baby.

I am in the habit of sterilizing my cushions by soaking them for twenty-four hours in a bichloride solution 1-1,000, or even 1-500. This has never seemed to hurt the rubber; the valve of course must be kept out. If there is much odor clinging to the rubber, Labarraque's solution will correct it.

MEDICAL PROGRESS.

MEDICINE.

The Blood in Pneumonia.—The contradictory results reported by investigators with regard to the finding of the pneumococcus in the blood of pneumonia patients led F. C. Kinsey (Jour. Am. Med. Ass'n, March 19, 1904) to make a new series of examinations. Fifty cases were examined, the blood being taken from one of the veins at the bend of the elbow under the most careful aseptic precautions. In answer to the question whether pneumococci could be found in the blood at any time, the cultural and other tests afford an affirmative answer. In one series of 25 cases, there were only three positives but in another series of 25, under more favorable conditions of growth, there were 19 cases with a positive result. It is possible that the negative results were due to unfavorable conditions of growth. The best results were secured with large quantities of blood (3 to 6 c.c.) with a dilution of over one to twelve of a liquid culture medium, preferably bouillon. He believes that the mere finding of the pneumococcus in the blood is of no prognostic importance whatever. Of the 19 positive cases in the second series, 69 per cent. recovered and 31 per cent. died, while of the negative cases, 33 per cent. recovered and 67 per cent. died. No worse prognosis seems to attach to a positive than to a negative finding. He found, however, that where the cocci were present in large numbers the prognosis was always grave.

Excretion of Oxalic Acid, etc., in Diabetes.—The amount of oxalic acid in the urine of diabetics is not regularly increased but W. v. Moraczewski (Zeitsch. f. klin. Med., Vol. 51, Nos. 5 and 6) obtained high figures more frequently than in other conditions. The influence of diet is somewhere different than normally for the addition of meat increases the amount in severe cases. With a strictly fatty diet and after the ingestion of calcium salts, oxalic acid, the conjugated sulphuric acids and indican are freely excreted but a distinct relation between oxalic acid and sugar is not always present. Both oxalic acid and acetone fall in amount after every change of diet, are influenced alike when phosphate of lime is given but after vegetable diet, the amount of oxalic acid, indican and conjugated sulphuric acid falls, while that of acetone rises. In all cases, the urine was rich in indican, and, after milk diet, in ammonia, especially after calcium. Urea and uric acid were found diminished and chlorides increased, especially after vegetable diet. There does not seem to be anything specific in the high amounts of oxalic acid, for the author has obtained equally high and even higher figures in hepatic disorders.

Proteids in the Urine of Nephritis.—A. Calvo (Deutsch. Arch. f. klin. Med., Vol. 51, Nos. 5 and 6) draws attention to the interesting fact that every albuminous urine will throw down a precipitate with acetic acid in the cold, if properly diluted. The amount varies and a large amount of albumin does not necessarily mean a heavy precipitate. The investigation of the character of this precipitate was a difficult task, but it probably consists of euglobulin and fibrinoglobulin in some cases and of serum albumin and pseudoglobulin in others. The occurrence and amount of serum albumin plays no constant rôle in the different forms of albuminuria but euglobulin and fibrinoglobulin are very abundant in febrile albuminuria and scarce in interstitial nephritis. The reverse holds true for pseudoglobulin: it is scant in febrile albuminuria and abundant in chronic nephritis. After dialyzing, every normal urine, free from albumin, will also give a precipitate with acetic acid in the cold, which consists chiefly of euglobulin and fibrinoglobulin.

The Problem of Glycolysis.—It is generally conceded that glycolysis is a specific fermentative process, but there is still considerable divergence of opinion as to whether the glycolytic ferment is performed in the cells and rendered active by a substance secreted by the pancreas or whether the ferment can only result by the combination of cellular with pancreatic elements. The experiments of A. Braunstein (Zeitsch. f. klin. Med., Vol. 51, Nos. 5 and 6) prove, however, that pancreas is not necessary to bring about a splitting up of sugar, for a rapid glycolysis was obscured if liver and coagulated blood were digested for some time with a sugar solution. The action of the ferment is very strong at first but is soon inhibited by the presence of carbon dioxide and acids The concentration of the sugar solution also seems to have an influence upon the rapidity of the process. The ferment is probably contained in the leucocytes; this would explain why a pneumonia or a suppurative cystitis will be followed by a reduction of diabetics.

Studies on Dysentery and Typhoid.—The bacteriology of dysentery is still a complicated one, especially since D. Jürgens (Zeitsch. f. klin. Med., Vol. 51, Nos. 5 and 6) carefully studied an epidemic in a small town. By many the bacilli of Kruse, Schiga and Flexner are considered identical but the germ isolated from the stools of almost all cases by the author, while morphological and in culture it closely resembled the Kruse bacillus, agglutinated only the blood-serum of an animal treated with the Flexner germ, so that the two must be looked upon as different species. The culture medium of v. Drigalski-Conradi has proven especially valuable; upon it the dysentery bacillus forms blue, transparent colonies resembling those of typhoid, while the growth of most other germs, except the colon bacillus, is inhibited. The agglutination test is not absolutely conclusive since all the members of the dysentery group agglutinate each other to a greater or lesser extent but the text is generally positive in high dilutions only with the specific cause of the disease. Pfeiffer's phenomenon, that is, the disintegration of the bacilli, if introduced into the peritoneal cavity of a guinea-pig together with the serum of a patient, cannot be resorted to in dysentery as in typhoid. In the former disease, the specific agglutination appears during the first days of the disease, reaches high degrees by the second or third week (1-100 to 1,000) and gradually falls by the second month. But it seems that the serum of patients suffering from other diseases also has some agglutinating power, thus 1-30 was positive in six cases of pneumonia, scarlet fever, measles and sepsis and even 1-200 in typhoid. It is thus evident that only high dilutions possess diagnostic value. During the epidemic a large number of individuals also suffered from an apparently innocent intestinal catarrh which was caused by the same germ, since the blood-serum regularly agglutinated though not in as high a dilution as where the discharge was bloody. The individual reaction plays an important rôle and it is even possible for perfectly healthy individuals to discharge so large a number of pathogenic dysentery bacilli, that multiplication must have taken place in the intestines. Outside of the germ and the degree of personal resistance, a third unknown factor is active in keeping up and prolonging an epidemic, for if all the diseased and those about them are moved to some other locality, the epidemic frequently comes to a sudden stop. In a second article (Zeitsch. f. klin. Med., Vol. 52, Nos. 1 and 2) reference is made to the fact that even typhoid bacilli have been found in the excreta of healthy persons. The paratyphoid problem is also discussed and the confusion caused by the group agglutination makes it evident that a bacteriological examination of the feces must now supplement the Widal test. Cases of supposed mixed infection with typhoid and paratyphoid germs must be regarded with suspicion, for almost every paratyphoid serum will clump typhoid and allied germs in suitable dilution. Clinically, paratyphoid differs very little from true typhoid; like here, there are mild, severe and atypical cases and without a bacteriological examination, the differential diagnosis can never be made. The complications too, are the same, and in the few cases which have come to autopsy, typical typhoid ulcers were found in the intestines together with the other, characteristic lesions of tphoid. The germ also occurs in the blood and roseolæ of paratyphoid cases and occasionally in the feces of healthy individuals. The mode of infection is still in doubt and it is probable that other factors beside contact infection are at work, though the source is unknown. With our present knowledge, a diagnosis of paratyphoid is only admissible if this germ is found in the feces without the typhoid germ, if it agglutinates in high dilution with the respective serum and if Pfeiffer's experiment is positive. But with every epidemic, paratyphoid bacilli may occur in the stools of patients suffering from some other disease, such as influenza or tuberculosis, so that with even so thorough an examination, mistakes are possible.

Alcoholism and Degeneration.—Under the above title a valuable list of statistics is published by G. v.

Bunge (Virchow's Archiv, Vol. 175, No. 2), which proves that alcohol really plays an enormous rôle in bringing about degeneration of the race. This is most clearly seen in the growing inability of mothers to nurse their offspring; thus, when mother and daughter of one family were not obliged to resort to artificial food, the father was a drunkard in only 2.6 per cent., while where both were unable to nurse, a history of excessive drinking was obtained in 42.2 per cent. All cases of functional derangement owing to imperfect condition of the nipples, were ruled out. The condition is hereditary, for if the mother has lost the power, it will never be regained in that particular degeneration. Other stigmata go hand in hand with deficient nursing capacity and a pronounced disposition, toward tuberculosis, nervous diseases and psychoses is very evident. The offspring of alcoholics also suffers more frequently from carious teeth.

OBSTETRICS AND GYNECOLOGY.

Supravaginal Amputation.—Statistics are worth something, and, although they are often juggled to suit individual preferences, they, nevertheless, represent a standard of work which must be a guide by which one must estimate the gravity and dangers of all operations. Herman E. Hayd (Am. Jour. of Obstet., Jan., 1904) cites the mortality of supravaginal amputation as 5.6 per cent., while that of total extirpation in the hands of more capable surgeons, is 9.6 per cent. The work of individuals, even with the serrenœud operation, is, of course, infinitely better than these figures indicate, but it would also be so if the supravaginal operation were done and the stump were dropped back into the peritoneal cavity. The suffering of the patients is less, the period of confinement is shorter, the dangers of subsequent hernias reduced to the minimum, and a more beautiful abdominal scar results, and less danger of subsequent adhesions of the bowel and viscera to the abdominal incision, with the future possibility of operation for strangulation and obstruction, and infinitely less wear and tear and labor for the operator, assistants and nurses. The writer believes that the supravaginal amputation for necessarily operable fibroids meets nearly every indication demanded of the abdominal surgeon, and can be applied, and has been applied, to every conceivable kind of tumors, with short pedicle or long pedicle, tumors growing deep into the pelvis, or out into the broad ligaments; and with results which make it a clean and ideal piece of surgery, and is the operation of choice, excepting in those cases where drainage must be provided for, or where the cervix for various other reasons should be removed. The author has had one death in fourteen cases operated upon by the method instituted by Baer and modified occasionally after the suggestions of Kelly and other more recent operators, when some special indication seemed to exist for their employment.

Ischuria in Retroflexion of the Gravid Uterus.—In looking over the literature it is noticeable that a great many explanations are put forward to account for urinary retention in cases of backward displacements of the pregnant uterus, says Chas. B. Reed (Am. Jour. of Obstet., Feb., 1904). In this fact lies sufficient evidence that none of them entirely meets the anatomical or physiological conditions. In one case it is assumed that the presence of the displaced cervix results in a definite anatomical change in the bladder—the formation of a valve-like fold, spur or tongue on the posterior wall, which is so developed that the catheter meets with no opposition, while the outflow of urine is effectually prevented by the action of the valve (Zweifel). In looking over the various factors and possibilities it is possible to summarize as follows: (1) Retention of urine in retroflexioversion is not due to direct compression of the urethra, or neck of the bladder whereby the lumen is mechanically closed. (2) It must be regarded as a form of "pressure paralysis" due to interference with the nerves supplying the bladder in some part of their course. (3) Compression of the principal motor nerve (pelvic nerve) is the most common source of retention. The part most subject to pressure is the pelvic ganglion lying near the great cervical ganglion of the uterus, although the nerve may be affected in any other part of its course, either near its distribution to the bladder, or close to the sacral exit of the component fibers. (4) Compression of the sensory nerves, either in the course of the nerve, or peripherally (in the bladder) may also rarely produce retention. (5) Both afferent and efferent filaments may be affected simultaneously in a given case of retention, but the order is usually consecutive. (6) Pathological conditions of the pelvis and abdomen, which irritate the sensory fibers of the bladder, produce the so-called "irritable bladder." (7) Retention of urine post partum and after laparotomies for tumors is due to intra-abdominal pressure, weakness of the abdominal muscles from overdistention and the dorsal decubitus.

Inversio Uteri of Puerperal Origin.—This condition is so rare, occurring as it does once in 190,000 deliveries, that Edg. Snyers (Gaz. de Gyn., Feb. 1, 1904) thinks that it is worth while to report the following case: The patient, a primipara aged thirty years, had been in labor about twelve hours, and although the cervix was fully dilated and the head in the right occipito-anterior position, forceps were applied because the uterine pains had become ineffectual. Delivery was accomplished very readily and without any difficulty. A single voluntary movement to expel the placenta by the woman, caused a complete uterine inversion. In spite of every effort on the part of the accoucheur, it was not possible to replace the uterus behind the pubis. The hemorrhage was so profuse that the operator was forced to desist and take the necessary precaution to check the hemorrhage and to administer champagne, caffeine and normal salt solution to overcome the threatening collapse. The uterus was packed with antiseptic gauze after the placenta had been thoroughly peeled off. The child was strong and healthy. On the following day renewed attempts were made to reduce the inversion, but in vain. Sixteen days later the patient developed phlegmasia alba dolens. The question of operation presented itself, but as the woman was very anemic and her general condition so bad that it was thought best to postpone this procedure until she could become stronger, care being taken to keep the uterus as aseptic as possible. In spite of all precautions the lochia became infected and the woman developed a septicemia. Finally vaginal hysterectomy was performed in order to save the patient's life.

Suprarenal Producing Lesions of Atheroma.—Atheroma is generally considered a chronic lesion of the inner lining of the blood-vessels caused by slow intoxication. To this toxic element certain authors add another fact which is general and local hypertension. Josuè (Gaz. degli ospedali, Feb. 23, 1904) has caused atheromatous lesions of the aorta in a rabbit by injecting for several months, every other day, three drops of 1-1,000 solution of adrenalin into a vein of the ear. The alterations thus produced are considered to offer a typical appearance of calcified atheroma. In one case an atheromatous plaque was distended, constituting a fusiform aneurism, such as may frequently be seen in atheromatous individuals.

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BLOOD PRESSURE IN SURGICAL CASES.

In February of 1903, the Committee on Surgical Research of the Division of Surgery of the Harvard Medical School undertook to determine, "as far as the opportunities in this country will allow," the extent to which blood-pressure observations in surgical cases may be of value from a clinical point of view. The Committee was instigated to this desire by the very suggestive and original work of Crile and by the recent researches of Harvey Cushing. The end in view was to be attained by the cooperation of the surgeons of the Massachusetts General Hospital, the Boston City Hospital, and the Children's Hospital in Boston.

The results so obtained were then to be collated and digested by the Committee, with the aid of the Department of Physiology, in order that a "rigid criticism might be brought to bear upon these investigations from a scientific point of view." Such was the inception of a work, the bearing of which must appear of the greatest importance, both from a diagnostic and from a therapeutic surgical standpoint.

A year has elapsed, during which Drs. Faulkner, Stone, and Murphy, of the three hospitals above mentioned, have been busied with investigations bearing upon the problem set by the Harvard Research Committee. They have presented their detailed reports, which, together with the critique and the comment of the Committee, are embodied in the *Boston Medical and Surgical Journal* of March 10. In judging of this final statement, it is well to review the conditions which have governed the joint research, in order that one may maintain the proper attitude toward the conclusions. It would be unfair, for example, to compare the undertaking with that of the famous Hyderabad Commission on the action of anesthetics, inasmuch as the latter was composed of the most eminent specialists in England, empowered by the aid of an ample research fund to maintain a series of long and difficult experiments.

The contributions of the Boston surgeons cannot be said to have the authority of specialists in this particular field of research, nor were they enabled to make any observations other than such as are possible in the surgical wards of any large hospital. On the other hand, the volume of their combined observations, together with the fact that individual bias and interpretation have been very largely eliminated by the method of a joint report, invests their conclusions with a high degree of authority and importance.

The instruments made use of by the different surgeons were of one type, namely, the Riva-Rocci sphygmomanometer, as employed by Dr. Cushing. It is now generally recognized that this instrument affords the most perfect mechanism for the clinical registration of blood pressure, far superior, certainly, to the earlier German instruments, notably that of v. Basch. The width of the armlet is a factor of considerable importance, to which the Committee has devoted some attention. It appears that the use of a 10 cm. armlet gives readings which are far more constant and more nearly independent of the influence of the soft parts than in case of a 5 cm. band. Armlets wider than 10 cm. are more cumbersome and possess no especial advantage. The exact relation borne by the readings of the manometer in this instrument with the true intravascular pressure are, however, still largely a matter of theory. Its use has not, as yet, been controlled by a series of actual arterial manometric tracings in man, and, as the Committee remarks, the different conditions in animals are not such as to ensure accurate results. Its records, therefore, possess an empirical value which is directly proportional to the volume and the accuracy of the conjoined clinical observations.

A prerequisite to the correct interpretation of the readings is a study of the normal, the physiological, and the accidental variations. In normal individuals the mercury ordinarily registers 120 to 160 mm., but may fall as low as 100, or may reach 200. Change of position, and psychic and emotional influences produce considerable variations. Age is of importance, inasmuch as the normal readings are very much lower in children. Chronic conditions, such as tuberculosis, or such special factors as nephritis and arteriosclerosis, play a very marked rôle in the final result. All these elements must, therefore, be carefully gauged in the appreciation of any reading.

Such are the general principles which must be accepted as guiding and controlling all special research on blood pressure. Unfortunately, the *positive* outcome of its work halts with this preliminary; what should come later is lacking. It does not appear that the blood pressure affords a guide of any considerable value in determining the condition of a patient either before, during or after operation, as compared with the importance of the other ascertainable physical symptoms. The blood pressure observations "serve, as a rule, only to confirm a diagnosis already made by the physical examination of the patient;" indeed, the latter affords a far more accurate gauge of the condition, and is, at once, far more easily carried out. It appears that only in cases of cerebral compression, and then only with the utmost caution, can the blood pressure be regarded as an important element in diagnosis.

The conclusions of the Commission, disappointing as they may seem when compared with the prejudices and anticipations of the medical world on the subject of blood pressure, are to be accepted for the time being, at least, as authoritative. Nevertheless, it is quite certain that the last word has not yet been spoken upon blood pressure, and its bearing on surgical operations. The crux of the matter would appear to lie in the fact that the blood pressure is not at one time identical in all the various vessels of the body. It may be high in the extremities and low in the splanchnic area, a condition which of itself would tend to overfill the latter system, and so, by a process of "bleeding the patient into his own vessels," prove the very cause of shock. Such, perhaps, was the condition in those cases recorded by the Commission, in which "the evidence, as obtained from blood pressure observations, appeared even to be misleading." Postulated this condition, it is evident that a high peripheral pressure becomes a prognostic omen of ill import, and calls for reduction, while the splanchnic vasomotors are to be simultaneously stimulated. Be this as it may, it is certain that the matter of blood pressure is quite too complicated to be settled by the Riva-Rocci alone, and that further investigations and other means will have to be invoked before its full significance is understood or appreciated.

PATHOLOGY AND SURGERY OF THE PANCREAS.

A. W. Mayo Robson has recently delivered a series of lectures on certain diseases of the pancreas which are full of charm and instruction. Failing the privilege of hearing them, every practitioner of medicine should heed what this most brilliant English investigator has to say on this little known topic.

It is a matter of pride to Americans that he should introduce these Hunterian lectures (*British Medical Journal—Lancet,* March 19, 26, *et seq.*) by referring to the work of an American. He quotes fully and gives diagrams from Opie's monograph, which, as is well known, discussed the relations of the ducts of Wirsung and of Santorini, and the bearing which these varying anatomical structures have to the etiology of pancreatic disease.

It cannot be expected that the general practitioner should follow in detail such intricate considerations as those presented in this contribution of Robson's. The chief matter of interest and of importance centers in what he has to say concerning the symptomatology of the diseased pancreas. His profound researches have carried him to the point where he frankly states that the diagnosis of pancreatic disease is far from easy, yet he gives us a classification which can safely be used for a basis of treatment. Robson groups the symptoms and pathology, because, as he well says, they are in this organ peculiarly inseparable.

The variations from the normal he discusses first, under digestive symptoms, second under physical signs, third under metabolic symptoms, and four under symptoms artificially produced. Under digestive symptoms, he submits the following: (*a*) Steatorrhea or fatty stools; (*b*) Azotorrhea, or faulty digestion of albuminous foods: (*c*) Sialorrhea; (*d*) Diarrhea; (*e*) Dyspeptic disturbances; (*f*) Emaciation, and (*g*) Nausea and Vomiting. Physical signs: (*a*) Presence of swelling or tumor; (*b*) Fever; (*c*) Pain and tenderness with muscular resistance; (*d*) Pressure on

adjacent organs; (*e*) Hemorrhage and (*f*) Jaundice. Metabolic symptoms: (*a*) Glycosuria; (*b*) Other urinary changes. Special symptoms: (*a*) Alimentary glycosuria; (*b*) Sahli's symptoms. Each one of these subdivisions is discussed with the author's usual clearness.

Of the whole group, perhaps the most interesting is centered upon the discussion of the urinary changes. The conclusions along these lines are as follows: Glycosuria is not common and cannot be relied on as a diagnostic symptom in disease of the pancreas, but when it exists along with other signs, it is extremely serious, and, in fact, as a rule, indicates an incurable condition. In turn indicanuria, maltosuria, pentosuria, and lipuria have been advanced as of diagnostic importance in pancreatic troubles. All these have been severally advanced and endorsed as useful signs of pancreatic disease, but it is significant that the small degree of importance which is attached to them is exemplified by Osler's discussion of the subject. He says: "The condition of the urine in diseases of the pancreas has no special peculiarities."

All investigators of pancreatic disease are eagerly hoping for a verification of Mayo Robson's prophesy, made before the American Surgical Association in Baltimore, during 1901, that he would shortly be able to suggest the means of establishing positive diagnosis of certain pancreatic disorders through urinary test. At that meeting he stated his belief to be that he was then able, by the examination of certain crystals, to distinguish between acute and chronic inflammations and between simple and malignant diseases of the gland. Since that date, the test has been applied to every case that has come under the author's care in which the pancreas was suspected, and also in a large number of control cases. The technic of the method of preparing these crystals, as discussed by Cammidge, will be considered later.

A statement from so very high an authority as Robson that a test has been found which enables the surgeon with a reasonable degree of surety to differentiate between a curative, benign condition of the pancreas which calls in the most imperative manner for operative intervention, and a malignant growth of the gland, for the treatment of which operation can avail but little and is therefore virtually contraindicated, is easily seen to be a matter of the profoundest importance. If, as is cited in his paper, cases have been presented to him which, with his generally admitted unequaled powers of diagnosis of pancreatic lesions, he has found himself unable positively to differentiate and has hence felt himself unable to treat except upon the findings of the urinary analysis, how welcome will this added diagnostic power be to those surgeons of lesser experience in this matter than Robson.

Second only in interest to the discussion of the urinary findings is the author's presentation of the causes of pancreatic hemorrhage. In all he dwells upon eight causes which in his opinion are either predisposing or exciting in their influence. Vascular disease of all kinds, headed by alcoholic or syphilitic degenerations, is naturally considered the paramount factor. Trauma may be a cause. The tissues of the pancreas are soft, and although the gland is well protected, it may be bruised by a violence which seems but slight. Fatty degeneration of the gland cells and fatty deposits in the pancreas, due to whatever cause, may lead to want of suitable support to the blood vessels which are thus rendered unable to withstand the normal blood pressure. This, in the author's opinion, accounts for the hemorrhagic pancreatitis so often seen in fat and flabby individuals. Fat necrosis in the gland or its vicinity has been suggested by Balser, who has found ground in support of his views. Disintegration of neoplasms, such as cancer or sarcoma may be the cause of extensive hemorrhage. Embolism of a pancreatic artery has been reported by Molliere, as the cause of the bleeding. It is well known that many general causes, which lead to hemorrhage elsewhere, may give rise to the lesion in the pancreas. Heart and lung disease, hepatic cirrhosis, hemorrhagic diathesis, the exanthemata and various forms of poisoning may all cause pancreatic hemorrhage. Pancreatitis itself may undoubtedly lead to a hemorrhage, but it would seem probable as a rule that the effusion of blood into the organ takes place rather as a result of some of the before mentioned causes and produces the pancreatitis rather than vice versa. Large pancreatic hemorrhages are probably more common than is usually supposed.

From this discussion of the purely clinical side of pancreatic disease, one can turn profitably to a presentation of the technic of the laboratory findings as given by P. J. Cammidge, whose paper follows Mr. Robson's. In 1900, he started upon the theory that there was some connection between fat necrosis and the hemorrhagic tendency so typically observed. He therefore examined the blood of several cases for glycerin

and glycerin derivatives. He found, however, that while this might theoretically be possible, its proof was practically impossible, because of the small amount of blood obtainable. He and Robson then turned their attention to the urine, and, recognizing the selective power of the kidneys by which they detect and excrete abnormal constituents of the blood, endeavored to show that the soluble products of fat necrosis or their derivatives, might be present in sufficient bulk to make them easily demonstrable.

Since these findings probably represent the most important advance which has been made in laboratory diagnosis recently, the more or less extensive technic should be widely known. It is as follows: The specimen of urine is filtered and 10 c.c. are poured into a small flask, one c.c. of HCl is added and the mixture boiled for ten minutes. A mixture of 5 c.c. of urine and 5 c.c. of water is then poured into the flask, which is cooled. Lead carbonate is now slowly added, to the extent of four grams, and after the completion of the reaction, the urine is filtered. To the clear filtrate are now added two grams of sodium acetate and .75 grams of phenylhydrazin hydrochlorate, and the mixture is boiled for four minutes. It is then poured into a test tube and allowed to cool. In from one to twenty-four hours a yellow deposit forms which with a one-sixth objective is seen to consist of sheaves and rosettes of gold and yellow crystals. Obviously, all sugar must be removed from the specimen before this method is utilized. The crystals met with in non-pancreatic cases turn brown and dissolve in dilute sulphuric acid in a somewhat different manner than in other conditions. The difference in the shape of the crystals and the increased time taken to dissolve them in sulphuric acid is the basis upon which the differential diagnosis is made.

The correct diagnosis of malignant disease requires care, but it can be made, Cammidge says, with a very considerable positiveness. The crystals are slow to dissolve, are large and broad, but it must not be forgotten that occasionally there is associated with the malignant disease a certain amount of inflammation which interferes slightly with the positiveness of the test.

VARIOLA.

It has long been known that the staff of the Pathological Department of the Harvard Medical School, at the head of which is Prof. W. T. Councilman, has been interesting itself in variola. Now and again there have been reports and articles in the progress of the work, but these have been palpably of the nature of preliminary communications rather than of final statements, and have served to whet curiosity rather than satisfy it.

However, the time has finally come at which the fruits of these two years of labor and research have grown ripe for publication, and Drs. Councilman and Ernst have seen fit to present them in a noteworthy special number of the *Journal of Medical Research,* for February. The number comprises eleven articles and an epicrisis by Councilman. Of these articles, the most comprehensive is that which deals with the general pathological anatomy and histology of variola, the joint production of Councilman, Magrath, and Brinckerhoff, based on the study of fifty-four autopsies. The work has been done with the help of the most recent methods in histological technic, and constitutes a really important advance in many of the details which have long formed a fruitful subject of dispute. The development of the specific lesion, or pock, which presents a number of problems of considerable difficulty, has been traced with especial care.

It appears that the lesion is inaugurated by a degeneration of the cells of the lower layer of the epidermis, which is accompanied by an exudative inflammation. The products of the latter, at first predominantly serous, later more or less cellular, are contained within the spaces of a reticulum formed by the degenerated cells. With the increase of the exudate, the fibers of the reticulum eventually yield and rupture, and the typical, dell-shaped pock becomes a pustule. This process may take place wholly within the epidermis, or the corium may form the bottom of the pustule. Involution of the lesion is accomplished by absorption or evaporation of the fluid portion, exfoliation of the necrotic cellular débris, and regeneration of the epithelium. Such is the genesis and development of a lesion the nature of which has been a fruitful source of controversy ever since the early researches of Weigert. It is something characteristic and tangible in a disease which is otherwise most elusive and mysterious. Interest in the pock, however, is but a step toward the more intimate acquaintance with the etiological factors of the disease.

It has always been felt that the cutaneous lesion, presenting in its various phases a reflex of the clinical course, and apparently even determining the character of the latter, would eventually afford an explanation of much that has hith-

erto been inexplicable. The serious study of the pock from this standpoint is of rather recent date inasmuch as it had to wait upon an improvement in histological technic and the development of the bacteriological methods. It cannot be said, however, that the researches of the last twelve years have gone very far in clearing up the mystery. Bacteriological investigation has served to show quite definitely that none of the bacteria play anything except an accessory rôle, purely secondary in character, in the development of the pock and of the disease. In so far, their work has been of positive value.

Further than this, there is little but confusion and contradiction in the literature. In 1892 Guarnieri described a certain protozoan organism contained within the cells of the pock, and varying in size from that of a micrococcus to a nucleus. This work has been the point of departure of a large number of special researches with the aid of the most exact and delicate methods; unfortunately the results have not been commensurate. While a goodly number of observers have confirmed the findings of Guarnieri, there have not been wanting as many who have absolutely contradicted his results. In view of these conditions, skepticism has been the only attitude possible upon the etiology of smallpox. It has been the great service of Councilman and those associated in his work to put the discovery of Guarnieri upon a fairly firm foundation, and to have added to it many details of considerable value. They have found not only that the cells contain a microorganism which is peculiar, and which may be shown to be inoculable and transmissible, but they have succeeded in tracing and determining at least a part of its cycle of development. The latter part of the work has been assigned, very properly, to a specialist in protozoan zoology, Dr. G. N. Calkins, of Columbia College. Dr. Calkins accepts the name given by Guarnieri of *Cytorrhyctes variolæ*, and assigns the organism to the subclass *Neosporidia*, of the sporozoa; it belongs to a family (*Cytorrhyctidæ*) of which only two other representatives are known to exist, the parasite of the macronucleus of *Paramoecium*, and the brook trout parasite. The organism presents two phases of a life-cycle, a cytoplasmic, which is the earlier, and an intranuclear. The organism invades the epithelium as a minute homogeneous gemmule. This undergoes growth and differentiation, and by a schizogenetic process gives rise to a large number of other gemmules. After a further course of development, certain of these bodies find their way into the nucleus, where they undergo a differentiation which has been interpreted in the light of a sexual specialization. Thus it is believed that the sexual phenomena, including conjugation and subsequent division, are a characteristic of the intranuclear phase of the cycle. The gemmule, however, is the beginning and end of the entire process.

Such, in brief, are the chief elements in the parasitology of variola, and it is not easy to praise too highly the character of research to which they owe their elucidation. That a seal has been put upon the problem it would be presumptuous to believe. There still remain a host of questions to be answered, the unraveling of which will certainly be even more difficult and laborious than were the steps which led to the discovery of the parasite. The fate of the gemmule after it leaves the body, the transportation of the infecting agent by the body fluids, the method of cellular invasion—all these are questions of prime importance which urgently demand investigation.

Meanwhile, the assistants of Councilman have gone further to establish by means of experimental researches the constant and etiological association of the parasite and the lesion. It would be impossible to summarize all their work, for the details of which the original articles must be consulted. Suffice it to say that the combined researches, which really form integral parts of one larger idea, lead almost irresistibly to the conclusion that the real cause of the disease has finally been determined that it appears both in variola and vaccinia, and that the differences in character between these two manifestations are due entirely to modification in the life-cycle of the organism.

ECHOES AND NEWS.

NEW YORK.

Mount Sinai Hospital Appointments.—The first two positions on the House Staff were given to Ernest Sachs and Orville Schell who are to be graduated in June from the Johns Hopkins Medical School. The eighth place was given to Eben Alexander, Jr., of the Jefferson Medical College, Philadelphia. The intervening positions were assigned to members of the graduating class of the College of Physician and Surgeons, whose names were published in the last issue of the Medical News.

Hospital Interneships.—The following men from the College of Physicians and Surgeons secured hospital appointments during the past week: St. Mark's Hospital, E. J. Leavitt. German Hospital of New York, first, M. J. Myres; second, F. E. Neef; third, L. Fichter; fourth, T. J. Shreck; alternates, W. F. Bopp, H. E. Kudlich. Post-Graduate Hospital, L. P. Runyon, T. O. Vanamee, E. J. Smith. Newark

(N. J.) City Hospital, C. R. O'Crowley; alternate, J. Levy. St. Vincent's Hospital, M. S. Black, A. M. Bell, D. C. Fassett, D. J. Flynn, W. J. O'Leary, T. J. Cherry. Norwegian Hospital (Brooklyn), Charles Eastmond. Presbyterian Hospital, R. W. Cook, D. Cook, St. John Ward. H. H. Mason, Geo. Lathrop; alternates, B. W. Paddock, A. Vander Veer, Jr. St. Luke's Hospital, W. Ward, F. V. Hussey, A. R. Moffitt, D. G. Littell, S. M. Chessman, A. D. Mittendorff; alternates, G. Hale and I. O. Woodruff.

Gift for Eye and Ear Infirmary.—Mrs. John E. Parsons, of 30 East Thirty-sixth Street, daughter of the late Benjamin H. Field, ex-President of the New York Eye and Ear Infirmary, has sent $1,000 to Treasurer John L. Riker of the Board of Directors of the infirmary to go toward a fund to be used for the perpetual endowment of the institution.

Gift to German Hospital.—The will of Maximilian Schaefer, who died about two weeks ago, has been admitted to probate in this State, and provides for the distribution of $12,000 among various charities. Of this amount $7,500 is bequeathed to the German Hospital at Lexington Avenue and Seventy-eighth Street. Mr. Schaefer in the will directs that of the bequest to this hospital $5,000 be used to endow a bed for the free treatment of employees of the F. & M. Schaefer Brewing Company and such other patients as may be designated from time to time by the executors and trustees.

Plans for Convalescent Hospital.—New York's first convalescent hospital is to be established at New Dorp, Staten Island, by St. John's Guild. This will inaugurate a system of hospitals for this city similar to those of London, which have accommodations for more than 13,000 convalescents. That New York has never had more than 200 beds in all its hospitals for this class of patients has long been deplored by physicians, who are in a position to know the vital need of special care for recovering invalids. Twenty-five thousand dollars will be expended at once to equip the summer Seaside Hospital at New Dorp for winter use, and plans for a $350,000 addition are being considered by the guild. Dr. William Maynard has recently returned from a long sojourn in London, studying the convalescent hospital system there for the St. John's Guild. His plans for the installation of the first convalescent hospital in the city were formally approved at the meeting of the trustees of the guild on Tuesday night. Three hundred and twenty patients will be accommodated by the first expenditure. Many hundreds more are to be provided for later.

Sensible Comment.—A doctor in an Illinois town was recently quoted as contributing to a discussion as to whether the newspapers should publish the name of the attending physician in an accident case, the statement that to have this done "would spur him on to greater efforts to secure the complete recovery of his patient." That is truly a curious remark, however one looks at it, and curious, too, is the way the New York *Medical Journal* looks at it. "We always hesitate," it says, "to comment on newspaper quotations of the alleged statements of physicians," which is a nice, pleasant way of beginning, rather characteristic of the medical press, and then it continues as follows: "If any member of our profession made the foregoing remark he should instantly matriculate into some profession or business where the lack of journalistic comment, which is so stimulating to him, would not necessarily imperil the lives of others. The remarks exhibit a mental attitude that we cannot harmonize with our concept of any physician, however unfit." Of course that's all right in substance, but its implication that good doctors either are or ought to be indifferent to "journalistic comment" is just about as absurd as was the Illinois doctor's implication that he would work harder for a patient with whom the newspapers had connected his name than for one whom he could cure—or not cure—without attracting any particular attention. That doctors can make improper use of publicity is known to none better than the men on newspapers, one of whose constant duties it is to see that the doctors who want to do just that thing do not succeed too often in doing it. There are, however, proper as well as improper uses of publicity, even for a doctor, and even in medical matters there not a few lay papers that compare with the medical press about as the ordinary physician compares with the specialist. The trouble with the doctors is that they are always regretting the days when they were a sort of priesthood and their art was a "mystery" understood only by themselves—and by themselves none too well. There's no mystery about it now, and the pretense that a layman necessarily is incompetent to criticize the language or the acts of the doctors is the wildest nonsense.

The otherwise sensible comment of the *Times* is spoiled by this silly ending.

New York University Building Decision.—By a recent decision of the Court of Appeals the final step has been taken toward the settlement of the controversy between the N. Y. University and its former Medical Faculty, the members of which resigned in 1898 and founded the Cornell University Medical College. The Court of Appeals confirms the decision of the lower courts ordering the return of the building and property to the former owners. The University Medical College like all others of its time was originally and for many years a proprietary institution holding its charter through the N. Y. University, but wholly independent of it in management. In the effort to improve standards of teaching it became evident that this proprietary quality should be eliminated, and the Faculty accomplished this by the aid of a gift of money from Col. Payne by which the ownership of the Faculty was cancelled and the property was placed in the hands of a corporation fund for this purpose, the Faculty agreeing to accept fixed salaries in lieu of a division of the profits. After a few years, with the intention of establishing a closer connection with the N. Y. University, it was agreed that the corporation which held the property and managed the affairs of the College, composed largely of members of the Faculty, should transfer their property and function to the N. Y. University, and that the latter should manage the College through a "Medical Committee" of the Council composed of three members who should be satisfactory to the Faculty. On nomination of the Faculty two new members were elected to the Council, and, with Col. Payne, the donor of the money, constituted this committee. Within a few months disagreements arose over a proposed consolidation with Bellevue Hospital Medical College; the recommendations of the Medical Committee were overridden by the Council, and the Faculty held that the agreement had been broken. Reestablishment of the original status was refused by the Council of the University, and a year later the Faculty seceded and established the Cornell University Medical College, and the Corporation which had transferred the property sued for its return. The N. Y. University then took over the Bellevue Hospital Medical College as its medical school with most of the Faculty and made it its medical department. The property is valued at $150,-

000. The results of this final decision are that the large buildings formerly occupied by the New York University adjoining the Loomis Laboratory are now the undisputed property of the Corporation, many of whom are members of the Faculty of the Cornell University Medical College.

PHILADELPHIA.

Frankford Hospital.—Dr. H. E. McCaffrey has assumed the duties of resident physician in the Frankford Hospital, succeeding Dr. J. W. Kenney, who recently resigned. Dr. McCaffrey comes from Bristol, R. I., where he was for some time in charge of a sanitarium.

Changes in Bureau of Health.—Drs. J. S. McClintock and Mary E. Pennington began on April 1 their duties as bacteriologists in the Bureau of Health, succeeding other employees whose resignation had been asked. Chief Milk Inspector Byrnes, associated with the Health Department for more than twenty-five years, has been superseded by former Assistant Inspector Clegg.

Many Trips for Ship's Surgeon.—When the Red Star Line steamship Switzerland docked here during the past week, her surgeon, Dr. Edmund Y. Burrows, completed his two hundred and fiftieth round trip between this port and Europe. This record is claimed to be unequaled. Dr. Burrows has spent nearly all his life on the seas, having been a seaman aboard various ships before his appointment to the Switzerland.

Medical Inspection of Schools Instituted.—The daily medical inspection of children in the public schools of Philadelphia began on April 5. With the possible exception of a few schools in outlying sections, every school will be visited daily. Director Martin states that the first object of the inspectors will be to exclude children suffering from contagious diseases; secondly, to exclude all those who have non-contagious diseases, but who are too ill to remain in school. Afterward there will be made a careful examination in order to discover physical defects, including spinal curvature, flatfoot, deafness, defective eyesight, narrow chest, etc. Diagnoses will be communicated to teachers by a code in order that the child may not know the nature of the disease. In all cases the parents are to decide regarding any medical care to be instituted.

Millions for Improvement of Hospitals.—Commissions for new buildings and improvements on various hospitals in the city, now in the hands of builders, amount to several millions of dollars. Among the institutions thus extending are the Jefferson, St. Agnes, Episcopal, Will's Eye, Presbyterian, Home for Incurables, Rush, University, St. Timothy's, Methodist, Howard, Mt. Sinai, and the Phipps Institute. At the Home for Incurables at Forty-eighth Street and Woodland Avenue the first of two cancer wards is to be built.

Course in Tropical Medicine.—A course of ten lectures on Tropical Medicine has been instituted by the Medical Department of the University of Pennsylvania. The present year's course is being delivered by Major Guy L. Edie, U. S. A. They began on March 23 and will continue on each Wednesday and Friday until completed. They are given in the Laboratory of Hygiene, from 5.30 to 6.30 P.M. Members of the profession are cordially invited to attend.

Director Martin to Establish Fresh Air Retreat.—Dr. Edward Martin, Director of Public Health and Charities, has purchased an old mansion and twenty acres of land near his summer home in Delaware County and will transform it into a fresh air retreat for sick and needy children who seldom see trees or grass. In order to get them out doors as much as possible, tents will be supplied in addition to the house itself. The home will be supplied with occupants from those children coming under the personal notice of Dr. Martin and also to some extent by various societies. The place will be ready for occupancy about May 1. It is entirely a private undertaking, one that Dr. Martin has had in mind for several years.

Massage of the Heart as an Aid to Resuscitation.—At the meeting of the Philadelphia County Medical Society held March 23, Dr. W. W. Keen reported two cases of massage of the heart as an aid in resuscitating patients under the influence of anesthetics. One was a personal case of laryngectomy in a patient who took the anesthetic very badly, both at that time and during a previous operation. Other methods of restoration having failed, the abdomen was opened and the heart massaged through the diaphragm without opening that structure. This manipulation was unsuccessful in reviving the patient. The second case was one of hysterectomy, reported through the courtesy of a Swedish physician. In that instance the chest wall was resected and the pericardium laid bare. Recovery occurred. Dr. Keen also reviewed 25 additional cases from the literature. He believes the measure to be justified in certain instances after the apparent failure of other less radical means; other methods, even when massage is employed, must not be neglected. In answer to a question, Dr. Keen said that the determination of time under such circumstances was always a very difficult matter, but broadly speaking, he would not resort to massage under five minutes after pulsation ceased, and would not use it after ten had elapsed.

Vaccination Law Needed.—Dr. Benjamin Lee, Secretary of the State Board of Health, looks upon the power to enforce vaccination during the outbreaks of smallpox as among the most valuable of the legislative means of controlling the disease and would welcome such power in Philadelphia. West of the Alleghanies the epidemic appears to be under control and this is attributed by Dr. Lee largely to the power of compelling vaccination vested in the health boards of cities of the second and third classes. In Pittsburg and Allegheny this procedure has diminished the number of cases fifty per cent. during the past three months. In the Eastern parts of the state there is great difficulty in convincing the physicians of some counties that smallpox actually exists; some pronounce the disease to be an entirely new one, never before described. The State Board of Health is now furnishing vaccine virus free to small villages and rural districts and bearing at least part of the expense of vaccination.

Marked Increase in Typhoid.—For the week ending April 2 there were reported 321 new cases of typhoid fever, the largest number for many years. Deaths for the same period numbered 24. Since January 1 there have been 2,056 cases of the disease. Thorough investigation of the milk supply of the city has eliminated that source of infection and the water supply is held responsible.

War on Baby Farms.—Coroner Dugan is at present conducting an investigation into several infanticide cases and numerous arrests have been made. An important case is now under trial. Revolting details regarding the doings of malpractitioners and

the keepers of "farms" have come to light. Among these were the burning in furnaces of live infants. Evidence of a combination of these "doctors," extending into cities other than Philadelphia, is said to have come to light. As one result of the commendable investigation now being made, the proprietors of at least a dozen suspected places have closed their establishments and left the city. More disclosures are yet to be made.

Phipps Institute.—It is announced that Dr. M. P. Ravenel, of the Medical staff, will shortly sail for Genoa, Italy, to spend the greater part of the summer with Professor Edoardo Maragliano in the study of the question of specific therapy of tuberculosis and a possible vaccination against that disease. The Phipps Institute has already accomplished much in the cure and prevention of tuberculosis and valuable results may confidently be expected from this latest enterprise of the institution. The ability of Dr. Ravenel as a conservative scientific investigator is recognized by the profession throughout the world.

Dr. McLeod Able to Walk.—Dr. George I. McLeod, of Ardmore, who had both feet amputated, as the result of being crushed by a train last December, is now, by the aid of artificial feet, able to walk with but a slight limp. This happy outcome of a most severe injury is a source of great delight to the many friends of Dr. McLeod. He is soon to resume the practice of his profession.

CHICAGO.

Personnel of Examining Board.—The County Civil Service Commission has announced the members of the examining board for the promotive examination for the work of senior physicians at the Dunning institutions as follows: Nervous and Mental Diseases—Drs. Sydney Kuh, Hugh T. Patrick, and Daniel R. Brower. Medicine and Surgery—Drs. Frank Billings, John B. Murphy and L. E. Schmidt. Tuberculosis—Drs. Wm. A. Evans, Geo. W. Webster, and A. C. Klebs. The examination will take place at the Dunning institutions April 14, 15 and 16.

Dunning Staff.—The County Board has confirmed President Foreman's appointments to the consulting staff of the Dunning institution. Following are the appointments: Dr. Frank Billings, consulting physician (internal medicine); Dr. John B. Murphy, consulting surgeon; Dr. Wm. A. Evans, consulting pathologist; Dr. Hugh T. Patrick, consulting physician (insanity); Dr. Arnold C. Klebs, consulting physician (tuberculosis).

Caution Against Hydrophobia.—This subject is discussed at considerable length in the weekly bulletin of the Health Department, and among other things the report says: "The number of rabid dogs which have been killed during the last few weeks, brings from the department of health the advice that the public should appreciate the importance of securing a dog that has bitten anyone and keeping him alive until it is positively known whether or not he is suffering from rabies." It also recapitulates the symptoms of rabies in dogs as follows: "Beware of a dog when it becomes dull and hides away; appears restless; always on the move and prowling; whose countenance is somber and sullen; walks with head down like a bear. Beware of one that barks at nothing, when all around is still. Beware of a dog that scrapes incessantly and tears up things. Look out for the dog who has become too fond of you and is continually trying to lick your hands and face. Beware, above all, of the dog which has difficulty in swallowing, which appears to have a bone in its throat, and one that has wandered from home and returns covered with dirt, exhausted and miserable."

Meeting of Bellevue Alumni.—On April 11 the Fourth Annual Meeting and Dinner of the Western Alumni Association of the University and Bellevue Hospital Medical College will be held at the Sherman House. The guests on this occasion will be Drs. Joseph D. Bryant and Egbert Le Fevre, of New York. The officers of the Association are Dr. David W. Graham, President; and Dr. Willis O. Nance, Secretary.

Drainage Canal.—The value, as a health protection, of the drainage canal, incomplete though it is, was strikingly manifested during the week, according to the Health Department. The waters of the streams about Chicago, formerly tributary to the river and thence to the lake, were higher even than in the record year 1892, in which year there were 1,489 deaths from typhoid fever, and Chicago's death rate was the highest of any city in the world. In that year the vilely polluted contents of the main river and its branches were poured incontinently into the lake without control. A volume of from 600,000 to 700,000 cubic feet per minute has been poured steadily through the drainage channel away from the lake down the Desplaines Valley. If 1904 escapes the typhoid tragedy of 1892, it will be due solely to the agency of the incomplete main drainage channel.

Intelligent Care of Infants in Summer.—Dr. A. Belcham Keyes recently gave a talk on this subject before the School of Domestic Arts and Science, Chicago, and after giving some sensible advice and timely hints to mothers, he spoke of the work of the Milk Commission, saying that under the auspices of the Children's Hospital Society of Chicago, its work is to inspect farms; to advise with the farmer as to the improved methods of hygiene for the cow, cleanliness in milking and shipping the milk to the whole city of Chicago; also to distribute good, pure milk, fresh, or Pasteurized, or modified, to the poor mother at a reduced price; also to instruct the mother, at mothers' meetings, in hygiene and feeding. This good work was done last summer to the extent of distributing among the poor 222,000 bottles, representing nearly 51,000 quarts of milk, besides a large quantity of barley water. The benefit of this work was not to the poor alone, but to every householder in Chicago. Its inception was in the visit of a leading Austrian specialist in deformities, who called attention to the long-felt needs of children for proper care in sickness, as well as for a preventive or prophylactic care of their hygiene and diet in infancy. Dr. Keyes reviewed what good feeding in infancy prevents: Firstly, it lessens the number of cases and mortality from acute intestinal and infectious diseases. Secondly, it avoids the distressing conditions known as English disease, or rickets, from which a large number of children die yearly, and, if they survive the disease, are often deformed for life. Thirdly, a large number of the cases of tuberculosis, especially of the bone in young children, are predisposed to the disease by the catarrhal conditions of the intestines, in which condition they take into the circulation the bacillus of tuberculosis, which the imperfect inner lining of the blood vessels of the long bone make a good resting place, with its resultant chronic invalidism and later frequent implication of the lungs and death. Fourthly, proper infant feeding—even if these first

three are escaped—is a necessity for the good health and, perhaps, even the formation of the character of the child that later will become the man, and this is the preservation of the health and character of the American-born man.

CANADA.

No Adulteration in Canadian Liquors.—Under date, Ottawa, March 31, the Department of Inland Revenue have issued a bulletin on distilled liquor. The samples analyzed consisted of: Rye whisky, 91; white, 30; Scotch, 24; Irish, 2; gin, 27; rum, 12; brandy, 30; total, 216. Mr. McGill, who made the analysis, states: "No delcterious substances have been found in any of these samples. In accordance with special instructions, I have made examination for alkaloids in all whisky samples, having less than 75 per cent. proof strength. A negative result was obtained in every case. The principal adulterant is water. In order to enable me to say, whether or not a sample may be styled adulterated from dilution with water, it is necessary to recognize some standard strength for alcohol. The British Sale of Food Amendment Act for 1879, fixed the minimum limit strength for gin at 65 per cent. and that for brandy, rum and whisky at 75 per cent. proof spirit. Although these limits are not legally recognized in Canada, I have used them (in the absence of any other standard) for purposes of comparison. The spirits most tampered with are whisky (rye and malt) and gin, while gin shows a noteworthy falling off in strength." In conclusion Mr. McGill says: "I may add that the furfurol test and the production of a distinct turbidity (opalescence) on the addition of water to the distillate are the chief means we possess for discriminating between a liquor which has been produced by direct distillation from the 'mash' and one which has been manufactured by reducing rectified spirit with water to the desired strength and further addition of flavoring or coloring matter. Scotch and Irish whiskies and gin, rum and brandy are liquors of the first type (sometimes spoken of as pot-still spirits). Rye whisky and white whisky (malt whisky) are usually manufactured from rectified spirit."

The Donations to McGill University.—Sir William McDonald's recent very handsome gift to the Student's Union is a further reminder of the extent to which McGill is indebted to Montreal citizens. The list of benefactions to McGill University is a long one. In addition to the large gifts of such men as the Hon. James McGill, Sir William McDonald, Peter Redpath, Esq., Lord Strathcona, the Molsons, etc., there have been a large number of substantial donations, which have not excited quite as much comment in the public press, but which have nevertheless been of much service to the University and the cause for which it stands. The total donations in lands, buildings, apparatus, together with the Hon. James McGill's original endowment and donation in land reaches the value of $2,300,172.72. Miscellaneous endowments reach the sum of $2,074,504.78, while special chairs have privately been endowed to the value of $962,393.32. A sum amounting to $60,790.80 has been contributed to a fund for establishing scholarships, granting medals, etc. The total amount in donations of lands, endowments, etc., reaches in sum total the very handsome figure of $5,597,861.62.

The Medical Branch of the Canadian Militia.—The Medical Branch of the Militia Department has now on order a large supply of material and equipment that will add materially to the efficiency of this service, and when certain reforms now in contemplation are carried into effect, will make it one of the best branches of our citizen army. The purchases include 18 ambulance wagons of a new type designed by Lieutenant-colonel Fiset, Director-General of the Canadian Army Medical Service. Each wagon will be a hospital in itself, with room in it for four patients lying down, or 13 sitting. There will be beside nine water carts, that is, one for each bearer company; 12 sets of medical panniers, 12 sets of surgical panniers, 18 sets of santeen panniers, 50 surgical haversacks, and 50 monkey boxes. Part of this material is being manufactured in Ottawa, while the balance is being brought from the old country.

Ontario Doctors May Be Prosecuted for Failure to Make Returns.—Dr. Hodgetts, Secretary of the Ontario Board of Health states that in future the medical men must report all cases of infectious or contagious diseases. He has looked up the records and finds that in 1902 there were returned to the Department 1,542 cases of typhoid fever, while the hospital statistics show 2,067 cases, with 242 deaths. In 1903 a return from the 700 divisions showed 1,012 cases, while in the hospitals there were 1,918, with 298 deaths. The purpose of the Medical Act, he says, is being destroyed and the healthy condition of the province very much endangered. During the past few months several outbreaks of typhoid fever have been covered up by medical men failing to report. Prosecution may be resorted to in order to wake doctors up and protect the public.

Canadian Medical Men for Europe.—Dr. J. Alex. Hutchison and Dr. George E. Armstrong, of Montreal, along with Dr. Murray McLaren, of St. John, N. B., and Dr. W. G. Anglin, of Kingston, Ont., the latter of whom has just recovered after a prolonged attack of blood poisoning, will sail on April 9 from Boston, for Italy. They will visit the principal hospitals of that country, finally making their way to Vienna. They will visit the home and hospital of Dr. Lorenz.

Legal Action Re Adulteration of Foods.—The Medical Health Officer of Montreal, Dr. Laberge, has taken two important actions in the Recorder's Court against an American and a Canadian firm that were selling canned tomatoes in Montreal that were colored with aniline. The importance of the actions was that they were being taken under the Federal Act, which gave the city power to prosecute for fraud, while under the Provincial Act, they can only prosecute on the plea that such coloring is dangerous to health. It will be the first time that the city has taken procedure under the Federal Act, and where fraud will be charged.

New Brunswick Provincial Hospital for Cure of Nervous Diseases.—The New Brunswick legislature has before it a bill to change the name of the Provincial Lunatic Asylum to the New Brunswick Provincial Hospital for the Cure of Nervous Diseases. The bill authorizes the commissioners to employ two disinterested and competent medical men, who with the superintendent, shall examine all patients and see who ought to be in the asylum and who should be sent elsewhere. There is an impression abroad in New Brunswick that the institution has been used for the purpose of getting clear of undesirable people, who should be cared for by their friends or sent to the almshouse. It is also proposed that even where a certificate of insanity has been granted by two physicians, the superintendent need not admit the patient if he has a doubt, but may consult with an outside physician in regard to the case.

GENERAL.

Officers American Association of Pathologists and Bacteriologists for the Ensuing Year.—President, Dr. Simon Flexner; Vice-President, Dr. James Ewing; Secretary, Dr. H. C. Ernst; Treasurer, Herbert N. Williams; New Member of the council for vacancy occurring in 1905, Dr. W. T. Howard; Mem-

ber of the Executive Committee for the Congress, Dr. H. C. Ernst.

Japanese Biologists.—The *Times* speaks with approval of the splendid work done by various Japanese scientists during the past decade as follows:

"It is probably not generally known that during recent years Japanese contributions to science have been numerous and important. The most conspicuous successes of its original investigators appear to have been in the field of biological research, a study demanding great patience, manual dexterity, and a refinement of technic which are quite characteristic of the people who are now occupying so large a share of the world's notice. In their contributions to our knowledge of pathogenic microorganisms the Japanese are pushing German and French experimenters for the first place, and are far ahead of those of Great Britain or the United States. Several years ago Kitasato segregated and described the specific germ of tetanus and was admittedly the first to do so. This discovery was followed by the preparation of a tetanus antitoxin which has been extremely useful. Another Japanese, Shiga, has discovered the bacillus which is chiefly responsible for dysentery, so fatal to the soldier in war time, and use of this knowledge is being made to safeguard the Japanese troops in Manchuria and Korea with excellent effect. The absence of ameba in many cases of dysentery critically examined was the cause of much confusion in the clinical study of this disease until Shiga established the fact that in such cases the disease is due to the presence of a microscopic plant now known as the *Bacillus dysenteriæ*. Still other contributions of great value to biological knowledge have come from Japan, and the fact is of especial interest as showing in what directions the peculiar civilization of that country has developed since its association with the Western world was resumed."

A Useful Call Down.—We quote from a recent number of the *Critic and Guide*, wherein attention is called to certain statements made by the manufacturers of a new iron albuminate compound. The editor comments as follows: "1. The manufacturers state that (——) is neutral in reaction. I would ask my readers to test it with litmus paper or with phenolphthalein. I find it distinctly acid, and I think I am able to test for a reaction. 2. The percentage of iron in (——) is rather a mooted point, which I should like to get some light on. The manufacturers say: 'Each tablespoonful of (——) is equivalent to one grain of elementary iron.' Well and good. But Dr. Coblentz says: 'I find eight per cent. of iron (calculated as metallic iron) present in the state of organic combination.' This of course leads one to believe that the preparation contains eight per cent. of metallic iron, which would be equivalent to at least 19.2 grains per tablespoonful. There is a great difference between 19.2 and 1. But let us assume that Dr. Coblentz really meant to say that the preparation contained eight per cent. of the organic combination. The formula given by the manufacturers is $C_{47}N_{17}SH_5Fe_8O_{22}$. The percentage of elementary iron contained in this 'definite' chemical must therefore be $^{448}/_{1638}$ or 27.3 —%. Eight per cent. of this is 2.184, which would give us at least 5.2416 grains of elementary or metallic iron to the tablespoonful. The manufacturers themselves claim that their preparation contains only one grain of elementary iron to the tablespoonful. How to explain this discrepancy? Dr. Coblentz is a careful analyst. Is it possible that the manufacturers themselves do not know the true percentage composition of their preparation? This is not very likely. So how to explain the discrepancy? I shall await the explanation with impatience. 3. The manufacturers state that (——) is absolutely unchanged by hydrochloric acid. This statement, I regret to say, is contrary to the facts, and I am at a loss to understand how intelligent manufacturers could make such a statement. That it is very decidedly changed by hydrochloric acid will be seen from the following simple experiment: On adding potassium ferrocyanide to (——) no change is noticed. But if we add hydrochloric acid to (——) and then add potassium ferrocyanide, we get a very decided reaction; namely, we get the well-known color and precipitate of Prussian blue, which proves conclusively that hydrochloric acid does decompose (——), changing it into inorganic iron. The further statement: 'hence it is free from local action on the gastric mucous membrane,' is therefore also untrue. 4. The manufacturers state that their preparation has attracted much attention in scientific circles in Europe. I may be pardoned if I doubt the correctness of this statement. If it had attracted attention, the attention was not sufficiently strong to bring it into the medical press. Disregarding false modesty, I will state that I am probably as familiar with foreign medical literature as any one man can be. I go through every medical journal of any importance in six different languages. My memory is also pretty good—and still I cannot recollect having seen any article in the foreign literature on (——). Of course, there is a possibility of an oversight. If this is the case, will the manufacturers kindly send me the foreign bibliography on (——)? 5. One word about the American literature on (——). I shall not say that it has all been made to order, but I would ask our readers to compare Professor (——) article with the advertising matter sent out by the manufacturers. If ever there appeared a 'write-up,' this is one—or I have lost my ability to recognize and diagnose 'write-ups' when I see them. Even the phraseology is strikingly alike in some places. Is it merely a coincidence? The manufacturers of (——) will greatly oblige the medical profession by shedding some light on the obscure points which I have touched upon in this editorial." More critical comment of this kind would bring to light a number of high priced "Professors" whose write-ups have no justification.

Suggestive Vital Statistics.—The annual report of the Board of Health of Connecticut, its immediate returns covering the year 1903 and its larger tabulations ending with the year 1902, contains some very significant figures of mortality, showing the mutations of disease and the causes. One of the most striking tables shows the steady and rapid decrease of consumption in the State. The table covers a period of twenty years, during which, notwithstanding an increase of population from 622,700 to 908,420 by the nearest censuses, the annual deaths from consumption fell from 1,505 to 1,356. Based on the Board's estimate of population, the death rate per 10,000 of population fell during the two decades from 23.2 to 14.9, or a reduction of 38.8 per cent. A fact brought out is that during the first of the two decades the deaths of females from consumption was much in excess of males, while, in the last decade, over 700 more males than females died from the disease. The change is probably accounted for in part by the shifting of occupations, and in part by the fact that young women of the Irish race, who were peculiarly susceptible to consumption in New England, have become inured to the climate. As the Board of Health reports are much more complete than they were twenty years ago, the reduced mortality from consumption is, in fact, considerably greater than the comparative returns indicate. In its report for 1899 the Board showed that mortality from consumption was considerably greater in both Massachusetts and Rhode Island than in Connecticut, though decreasing rapidly in all three States. The Board approves the treatment of incipient cases of con-

sumption by the open air and "tent" plan. For this purpose a sanatorium with 250 acres is to be opened in the town of Wallingford, for which an unknown donor has given $40,000, to which gifts of $3,000 and $5,000 have been added, and another large gift is expected. As distinguished from consumption, pneumonia shows a rapid increase, and now leads all diseases in mortality. In 1903 there were 1,428 deaths from pneumonia, as compared with 1,317 from consumption. For five years before 1890, and just before the first appearance of "La Grippe," the average number of deaths from pneumonia was only 970. Heart disease shows a similar, though less marked, tendency to increase. The decrease of typhoid fever as the result of systematic efforts to locate and stamp out the source of the disease shows very impressively in the returns. In thirty-eight years the deaths per 100,000 of population fall from 109 to 22, notwithstanding fuller returns in the later years. Partly as the result of intelligent treatment of smallpox, there was in 1903 only one death in 287 cases, the disease, however, being of a very mild type. The board criticises severely the common tendency to treat measles and whooping cough as "trivial" diseases in the face of returns for 1903, which show 450 deaths from them, as compared with 439 from scarlet fever, diphtheria and croup combined. The birth returns continue to indicate the slow but steady extinction of the purely native race, births from American parents falling in ten years from 8,487 to 8,283, while births from foreign and mixed parentage rise during the same time from 11,467 to 12,576. In a considerable number of the smaller farm towns the births from foreign or mixed parentage exceed the native births, suggesting the extent to which foreigners are taking up the farms in the back country towns. In one town, for example, almost purely a farm town, the births from native parentage in 1902 were 8 as compared with 16 of foreign or mixed parentage.—*Evening Post.*

Bubonic Plague Progressing.—A dispatch from Bombay dated March 29 states that the latest available bubonic plague returns for the whole of India for the week ended March 19, show a mortality of 40,527, an increase of 7,000 over those of the preceding week. In the Punjab and the northwest provinces each there is a death rate of 10,000 weekly; in the Bombay Presidency the deaths number 8,500, and in Bengal 5,000.

$500,000 Donated to Johns Hopkins Hospital to Offset Loss by Baltimore Fire.—John D. Rockefeller has given this amount to the Johns Hopkins Hospital. The gift is to prevent the curtailment of the usefulness of the hospital by the losses caused by the big fire. The money is given outright and will be turned over to the trustees of the hospital in whatever form they may elect.

OBITUARY.

Prof. A. B. Arnold, the author of several surgical treatises and a distinguished classical scholar and translator of old Hebrew and Arabic writings, died at San Francisco last week, aged eighty-five years. He was born in Germany in 1819.

Dr. Washington H. Baker died at his home, 1610 Summer Street, Philadelphia, April 1, aged fifty-two years. He was a graduate of Lehigh and the University of Pennsylvania. He served as resident to the German Hospital, was visiting physician at St. Joseph's Hospital, and a surgeon in the Second Regiment, N. G. P.

Dr. George H. Hammond died at his home in Freeport, L. I., March 29, of pneumonia and pleurisy, aged fifty-eight years. He was the son of the Rev. Mowbray S. Hammond and for some years was a staff surgeon in the Nassau Hospital at Mineola. He was a prominent member of the Masonic and several other fraternal orders.

Dr. Stephen P. Truax, a well-known Brooklyn physician, while engaged in performing an operation on a woman in the Bushwick Central Hospital, in Brooklyn, last Thursday morning, was taken ill suddenly and died in a few minutes. Dr. Truax lived at 257A Madison Street, and was forty-eight years old. He was born in Owego. In 1891 he was graduated from the Long Island College Hospital. He was the visiting gynecologist of the Bushwick Central and a lecturer on obstetrics and gynecology in the Post-Graduate Hospital in this borough. He had been a sufferer from heart disease and had lately been afflicted with the grip. Dr. Truax belonged to the Kings County Medical Society and several Masonic organizations.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, March 19.

THE LATE DUKE OF CAMBRIDGE AND THE DOCTORS—THE ENDOWMENT OF MEDICAL EDUCATION.

The Duke of Cambridge, a near relative of King Edward VII., has just passed away at the age of eighty-five years. He was for forty years Commander-in-Chief of the British Army, and had at any rate one quality which proverbially belongs to the British soldier: he stuck to his post and seemed determined to die there with his drawn salary in his hand. But circumstances were too much for him and he had to resign a few years ago, much against his will. It could not be said of him that he never set a squadron in the field, for he was in charge of a division in the Crimea where he showed himself so little master of his trade that had not Colin Campbell, afterward Lord Clive, been at his elbow, the force under his command would have been destroyed. But it is his attitude toward the army surgeons that chiefly concerns the medical profession. He was the most obstinate opponent of all reforms proposed for the medical department of the army, and lost no opportunity of showing his dislike of the officers of that department. In this he was zealously seconded by Field Marshal Lord Wolseley, whose own almost bloodless campaigns had been successful largely owing to the perfection of the medical arrangements. Wolseley had a brother in the medical service and it has been suggested that this was the reason of his hostility towards the doctors whom he called and, as far as he could, treated as "camp followers." The Duke's dislike of doctors has in like manner been attributed to a rankling sense of resentment on account of the obligations under which he had been laid by one or two of their body. At the battle of Inkerman, as may be read in Kinglake's *Invasion of the Crimea*, 700 men of the Guards had to face some 7,000 Russians. The Duke lost his head and went away "for reinforcements" with the result that the troops were thrown into confusion. The situation was saved by Dr. Wolseley who brought out a portion of the force right through a heavy Russian column. According to Sir William Howard Russell, the correspondent of the *Times*, the Duke was a second time rescued from a position of extreme danger by the splendid courage of another medical officer, Dr. Wilson. Wilson, who was Surgeon to the 7th Hussars, was attached to the Brigade of Guards as a volunteer. For his exploit he received the thanks of the Duke at the head of the Brigade after the battle. Wilson is also mentioned by Kinglake as having done excellent service

by rallying the men of the Guards at one spot where no other officer was present. In spite of his acknowledgment made of Wilson's services and of a special mention of him in a private dispatch to Headquarters dated November 6, 1854, the Duke's real feeling would seem, from his subsequent conduct in regard to the medical department, to have been such as could scarcely be described as gratitude. Wilson himself, it is sad to relate, received no more solid reward than thanks and died a few years later in a madhouse, the close of his life having been darkened by disappointment.

Sir Donald Currie, one of our shipping magnates who got a title some years ago as a reward for taking Gladstone on luxurious sea trips, has given $500,000 to University College, London, for the erection of buildings in which to house a school of advanced medical studies on a site which has already been purchased. A sum of $100,000 is to be devoted to the establishment of a nurses' home in proximity to University College Hospital, and to provide accommodation for medical students attending poor women who take advantage of the benefits of the Maternity Department. The gift has been formally accepted by Lord Roseberry as Chancellor of the University of London and Lord Reay as President of University College. They express the opinion that the donation will help in directing the course of the University and College along the line of development by which London may be made the seat of a University worthy of the Metropolis and of the Empire. University College used to have the most brilliant staff of any of the London medical schools. The names of Sharpey, Burdon-Sanderson, Michael Foster, Wilson Fox, William Jenner, Russell Reynolds, Bastian, Gowers, Erichsen, Henry Thompson, John Marshall, Christopher Heath, Graily Hewitt and Tilbury Fox used to attract students from every part of the world. Within a very few years this galaxy of talent was scattered, and in spite of the accession of younger men like Thomas Barlow, Victor Horsley, Godlee, Sidney Martin, University College has never recovered its old position. With a new hospital which it owes to the liberality of the late Sir J. Blundell Maple and the new school for which Sir Donald Currie has now supplied the necessary funds, it may enter on a phase of more vigorous life. University College Hospital has a place of its own in the medical history of London because it led the way in throwing its appointments open to competition in the spirit of its motto *Palmam qui meruit ferat.* Before its day London hospital appointments were kept closely in the family, and even the resident posts were strictly reserved for the private pupils of the surgeons, who found the payment of a fee, varying from $2,500 to $5,000, a profitable investment. This, with many other abuses which made the London hospitals until near the middle of the last century hot beds of monopoly and privilege, has since been swept away so completely that it is difficult to realize that such a state of things ever existed.

OSTEOPATHY IN NEW YORK.

To the Editor of the Medical News:

Sir: A bill has been introduced in the Legislature of the State of New York, by Senator Fitzgerald, entitled, "An Act to Define and Regulate the Practice of Osteotherapy." It is Senate Bill No. 983, Introductory No. 761, and has been referred to the Committee on Judiciary, of which Hon. Edgar T. Brackett is Chairman.

This bill defines "osteotherapy" as follows: "The practice of osteotherapy is defined to be a system, method or science of healing disease without the use of drugs or medicine of any kind. It is based upon the proven laws of anatomy and physiology, and comprises scientific and thorough knowledge of the structure and functions of the human mechanism, to apply certain organic laws and natural remedial resources, within the human organism itself, and by means of scientific manipulations and adjustment, assist nature, in harmonious accord with its own mechanical principles, activities and processes, to recover from displacements, derangements, obstructions and pressures, and to regain normal equilibrium of form, action and function, thus restoring to the patient normal health and strength. The word 'osteotherapy' is derived from the Greek ('osteon,' bone, and 'therapeia,' nature, healing). The word 'osteotherapy' is a correction of the word 'osteopathy,' which latter means, translated from the Greek ('osteon,' bone, and 'pathy,' suffering), bone suffering. The word 'osteotherapy' embraces the science so-called osteopathy, the practice of massage and Swedish movements to its fullest extent, and any one practising the latter sciences, under those or different names, shall come under the jurisdiction of this act."

It is difficult to imagine this as a serious effort to secure legislative enactment, for to read the definition is "to laugh"; but we must assume that the gentleman who introduced the bill was not actuated by the desire to amuse his colleagues. The measure goes on to provide for a board of examiners, appointed by the Regents of the University of the State of New York, for examination and registration fees, and so on. If physicians will write to the members of the Senate Judiciary Committee opposing this bill, its fate will not be long in doubt.

If you will publish this letter, together with the inclosed reason why "osteopathy" and allied "pathies" should not receive special recognition, it will bring the matter before the profession, and, I believe, aid those who are endeavoring to protect our professional standards. One of the arguments used at the public hearings before our legislature is that other States have enacted laws recognizing the practises of "osteopathy," "optometry" and other peculiar methods of treating disease. I cannot believe that New York will ever enact similar laws unless some better reason than this is advanced. I do not believe that New York will enact any laws affecting the practice of the healing art unless the medical profession will endorse them. This opinion is the result of about eight years of more or less intimate acquaintance with our legislators, and, if it is correct, then, to use the language of the day, it is up to the medical profession to be alive to its responsibilities.

Very truly yours,

Frank Van Fleet, M.D.,

Chairman, Committee on Legislation, of the Medical Society of the State of New York.

"CLEAR" (?) VISION OF THE CAUSE OF MIGRAINE.

To the Editor of the Medical News:

Dear Sir: Presumably on the principle "Strike while the iron is hot," Dr. G. M. Gould follows up the recent issue of his "Biographic Clinics" by an article on the "History and Etiology of Migraine," *Jour. Am. Med. Ass'n,* Jan. 16 and 23, 1904.

His studied effort to attract attention invites scrutiny. All truth is welcome: but truth may be so presented as to conceal truth. Treatment of symptoms or coincident conditions may be so advocated and adopted as to delay the discovery of the real cause of those symptoms or conditions. Fearing this, I draw the attention of your readers to it.

I will premise by saying that I believe in correcting errors of refraction and getting all the good possible out of it. In this I approve of this writer's practice, even when it cures migraine, as I have no doubt it often does. But I cannot accept his conclusions which I here quote:

"The appalling mystery of thousands of years, especially of the last 300, the explanation of the one disease whose cause nature and cure are unknown, is now clear to all who wish to know, and whose minds are capable of receiving the truth. Migraine . . . . is but one of the manifestations and results of eye strain."

"It (migraine) may be cured by lenses correcting the astigmatism on which the disease depends."

Of "Biographic Clinics," unique and interesting in their human element as they undoubtedly are, it should be stated that their effort to make a post-mortem diagnosis has not the justification of the usual object of an autopsy, since it is not for the purpose of finding out the pathological condition of the bodies concerned, but to show that the subjects suffered from astigmatism. This is done by the aid of the anamnesis *without* physical examination. In a word, the writer has given us, not a *demanstration* but an *inference*. Inferences are captivating but dangerous. The vice of the inference is twofold: First, if not severely logical, it gives undue emphasis to an error; second, it readily becomes the ground of the familiar fallacy known as "begging the question." That is, in the present instance, the astigmatism would be assumed on the strength of the inference and employed with the force of a proposition. This writer, who, above all others, I would suppose to be on guard against this fallacy, falls into it immediately in this very article (p. 241) in these words: "At present all over the United States, there are quiet, almost unknown, *oculists, who are curing thousands of patients af the afflictions described in the fourteen historic instances* of the two volumes called Biographic Clinics." My italics show the application of the fallacy as well as if the writer had finished the sentence by adding to it the words "by lenses correcting their astigmatism." I am not disputing the alleged facts as to *cures* (which, however, I suspect may be only *inferences*), but merely pointing out the fallacy in the logic. This writer was at one time President of the American Academy of Medicine. If he could err so easily, how much more easily and unthinkingly could the majority of his readers.

As to the validity of his inference, that these "clinics" had astigmatism, observe: First, that he does not *prove* it, for that requires the demonstration on the living subject; second, that he does not argue to a legitimate conclusion, for that would require the logical use of facts that at present are against him.

For example, first, his own article furnishes the fact that migraine is due to other causes—instancing organic diseases; second, migraines, without organic discases, have been cured without the aid of glasses correcting existing astigmatism and yet with complete relief of the symptoms which the writer connotes under the term eye strain; third, there are cases of migraine without astigmatism, but with the symptoms of eye strain that have been cured without glasses (some of these very cases may be studied in the files of the Medical News); fourth, the seton has cured migraine; fifth, nasal operations are continually being reported to our State and National Societies that have cured migraine; and the list is still incomplete. But, any one of these facts invalidates his *inference*, so unduly and harmfully emphasized.

I would not be surprised to find in a school-girl's essay on migraine the use of such words as "appalling mystery," or the incorrect statement that it is the "*one* disease whose cause and nature and cure are unknown." And it would not surprise me that she regarded migraine as a *disease*, for she might even be familiar with the fact that Head had made some interesting pathological findings in the Gasserian ganglion in cases of migraine; but she might not know that even these had not been declared to be the seat of the disease of which the migraine was an expression. But I *would* be surprised if I found her loading her predicate with two such significant phrases as he employs in his conclusion: "The explanation is now clear to all (1) who wish to know, and (2) whose minds are capable of receiving the truth." Being of those whose minds are incapable of receiving this truth (?), I have taken the pains to place an interrogation mark after the word "clear" in the writer's predicate. The spirit manifested in these phrases is the same as seen in another quotation which I shall here make from this same article: "Their (the patients') official medical advisers derisively smile that old-time, tired, sneery, sickly smile." If, in spite of appearances, this writer is overpoweringly in love with *the truth*, I fear he is *not* overpoweringly in love with the other members of his own profession. The monograph on this subject by a distinguished specialist, which he admits is "erudite and cultured," he yet treats with the scant courtesy of the following words: "This bizarre theory, the latest result of critical science, does not need a word to demonstrate its absurdity."

One needs to know the causes, and I am aware how "eager has always been the search for etiology"; but I see here as did Jonathan Wright, from whose history I have just quoted, the need of wisdom and restraint in the search.

The writer withholds his name until the author of "Biographic Clinics" amends his mental attitude to his fellows in the practice of ophthalmology, and for the present signs E Pluribus Unum.

SOCIETY PROCEEDINGS.

THE AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS

Met in New York City, April 1 and 2, 1904.

The President, Eugene Hodenpyl, M.D., in the Chair.

Eck's Fistula.—The first paper was read by Dr. J. Edwin Sweet, of Philadelphia, on the technic of the operation known as Eck's Fistula. Dr. Sweet said that he had tried various methods in developing a more improved method of forming a direct communication between the portal vein and the inferior vena cava, but that his experiments on dogs had led him to prefer sutures of black silk in uniting the approximated walls of the vessels, and a specially arranged cautery for making the incisions in the vessel walls, which openings should not be less than two inches in length, to prevent subsequent portal congestion.

Coagulation of the Blood and Thrombosis.—This paper was read by Dr. Leo Loeb, of Philadelphia, who said (1) it is possible to obtain thrombi composed mainly of agglutinated blood-plates in animals whose blood has been made incoagulable by injection of leech extract. It is, therefore, probable that agglutination of cellular elements and not formation of fibrin is the primary factor in thrombosis; (2) an active influence of the endothelium of blood vessels inhibiting the coagulation of the blood cannot be said to exist. (3) The serum of the dog has an inhibiting influence on the effect of tissue coagulins

which themselves accelerate the coagulation of peptonplasma. This inhibiting effect is probably a specific one. (4) Organs undergoing processes inside the body which are similar to autolysis, have still an accelerating effect upon the coagulation of the blood (coagulative processes in infarcts). (5) Anchylostoma contains, mainly or entirely in its anterior part, a substance strongly inhibiting the coagulation of the blood. The existence of this substance is probably one of the causes of the anemia of anchylostomiasis. (6) The material covering the intestinal mucosa has a strongly inhibiting effect upon the coagulation of the blood, being thus able to restrict hemorrhages. The pancreas possesses the least coagulative power of all organs examined and is therefore relatively favorable to the occurrence of hemorrhages.

Amaurotic Family Idiocy.—Dr. William G. Spiller, of Philadelphia, reported the results of his microscopical examination of the material from a case clinically typical of amaurotic family idiocy. Only about eleven cases of this disease, with careful pathological reports, are to be found, and in few of these has the method of Marchi been employed. Hirsch's and Sach's cases are the only ones in which the extraordinary changes of the nerve cells, first described by Hirsch, have been observed. Dr. Spiller found all the nerve cells of the central nervous system intensely diseased. These cells were swollen, rounded, almost free of dendritic processes, and also of chromophilic elements, except about the nucleus. In many cells the nucleus was displaced to the periphery of the cell and the chromophilic elements remaining about the nucleus were granular. He also found intense degeneration by the method of Marchi. The pyramidal tracts seemed to have been longer degenerated in the spinal cord than in the brain, and it appeared as though the degeneration had begun at the portions of those tracts that were more remote from the cells of origin. The degeneration of the pyramidal tracts was of longer duration than that of the rest of the white matter. The lemniscus, the anterior cerebellar peduncles, the intrapontile part of the fifth nerve, the white matter of the frontal and occipital lobes and the paracentral lobule, the corpus callosum, a piece of the internal plantar nerve, etc., showed intense degeneration by the method of Marchi. Amaurotic family idiocy, he said, is a disease in which intense and widespread degeneration of nerve cells and nerve fibers occurs, and probably is the result of imperfect development of the nervous system, so that degeneration of this system begins within the first year of life. Dr. Spiller referred to two other cases reported by him previously with Dr. McCarthy, cases which clinically were not typical, and yet in these alterations of the nerve cells were like that occurring in this disease were found. No similar cases are known in literature. He suggested that, possibly, these might be regarded as aberrant forms of amaurotic family idiocy.

Hemolysis in Human Urine.—Dr. Roger Sylvester Morris, of Ann Arbor, Mich., read a paper on this subject. He said that in examining urines of patients with various diseases for the presence of hemolysins, negative results had been obtained except in cases of pernicious anemia, in which he had found that a very slight hemolytic action seemed to be present at times. This, he said, might be interpreted as supporting the theory advocated by Hunter and Warthin, that pernicious anemia is essentially the result of increased hemolysis.

Specific and Non-specific Agglutinins.—This was the subject of Dr. William Hallock Park, of New York, who said that a single variety of bacteria injected into a suitable animal (rabbit, goat, horse), excites the production of a number of agglutinins. One or more of these have an affinity for the bacteria injected or practically identical varieties, and for no others. These agglutinins appear to be truly specific, and can be absorbed only by the bacteria which excited them. Along with the specific agglutinins, others develop in the blood of the injected animals, which act upon other varieties than those with which the animal was immunized. These other varieties may differ greatly in their biochemical and pathogenic characteristics. If an animal is chosen whose serum does not as yet contain these common agglutinins, it will be found that there is at first a development of abundant specific agglutinins and a slight or moderate amount of common agglutinins. If the injections are continued, the common agglutinins may equal in amount the specific agglutinins. Thus the serum of a horse treated for a number of months with the Manila dysentery culture of Flexner clumped that bacillus in dilutions of 1 to 10,000, and also a variety of the colon group in the same dilutions. The serum of a goat treated with the colon bacillus clumped during the first weeks of treatment the colon bacillus only, and then later the Flexner bacillus in dilutions of 1 to 3,000. The colon bacillus at that time was clumped in dilutions of 1 to 5,000. As a general rule, the agglutinins produced in an animal through the injection of any bacillus can be exhausted from the serum by saturating it with sufficient quantities of that bacillus. Not only the specific, but the common agglutinins will thus be absorbed. All other varieties of bacteria will simply absorb the common agglutinins, the serum thus treated clumping now only the variety of bacteria injected. The lack of knowledge concerning the varying amounts of specific and common agglutinins in the serum of animals at different times during a long period of injections has led to many conflicting statements. Thus the various dysentery varieties were long considered to have identical affinities for agglutinins because the serum of horses rich in common agglutinins was used. Similar conflicting statements as to whether or not certain colon varieties had with typhoid bacilli common agglutinins are accounted for in the same way. The same gradual development of common immune bodies has been noted by us for rather closely allied bacteria, such as the dysentery bacilli and certain colon types. The serum of the injected animals protected at first only from the variety injected, but later from other varieties.

Degeneration of the Spinal Cord Produced by Repeated Injections of Cultures of Bacillus coli communis of Low Virulence.—This was the subject of a paper by Dr. G. A. Charlton, of Montreal, and was read by Dr. J. George Adami, who said that at a previous meeting of the association, Dr. Charlton had called attention to the grave anemia which can be produced in rabbits by repeated injections of both cultures of a colon bacillus (*B. coli communis*) of low virulence obtained from the intestinal canal of the healthy rabbit. An anemia characterized by poikilocytosis, and by a diminution of the red cells of 1,500,000, and of the hemoglobin to 10 per cent, which was recovered from when the injections were stopped and appeared again when they were renewed. In those animals in which the anemia was developed to a considerable extent, there appeared

a spastic condition of the hind extremities, followed by wasting of the muscles and eventual complete paralysis of an ascending type. Histological studies of the tissues of such animals showed (1) advanced atrophy of the affected muscles; (2) slight evidences of degeneration in the peripheral nerves; (3) some pigmentation and other indications of degeneration in the anterior horn cells and to a less extent in the posterior horn cells; (4) extensive degeneration, with sacculated appearance of the posterior and lateral tracts. The appearances in the cords closely resembled those seen in certain cases of pernicious anemia. These investigations, Dr. Charlton thinks, would tend to confirm the view that pernicious anemia and sundry ascending degenerations of the cord are of a low infectious origin.

On the Nature of Blood-plates.—Dr. Joseph H. Pratt, of Boston, in introducing this subject, said that the opinion so widely held by pathologists that blood-plates are degenerative products of erythrocytes is untenable. The structures formed from the erythrocytes by the action of hypertonic solutions of various salts bear only a superficial morphological resemblance to the true blood-plate, which is a definite element of the circulating blood. For the study and preservation of the blood, Dr. Pratt employs a solution containing 1.5 per cent. sodium metaphosphate and 0.65 per cent. sodium chloride. Perfect cleanliness of slides and coverslips is also essential or the plates may vanish almost instantly. The blood-plates never contain hemoglobin. They are always colorless and present a granular appearance and are flat. Films of blood stained with the eosinate of methylene blue show coarse granules in the plates which take the basic dye. The degeneration products of the erythrocytes, described by Arnold and W. Lasson, usually contain hemoglobin, later they become colorless. They are refractive and vary in size, are usually spherical in shape and never flat. By allowing a drop of 5 per cent. acetic acid to mix with sodium metaphosphate and blood Arnold's bodies are formed and can be compared with the blood-plates in the same preparation.

Experiments upon Agglutinins.—Dr. B. H. Buxton gave his conclusions after experiments upon agglutinins by Dr. V. C. Vaughan and himself. He considered three points in connection with work done on typhoid bacilli. Cultures of typhoid bacilli, he said, might be good or bad agglutinators, that on passing a good agglutinator through guinea-pigs it rapidly lost its agglutinability up to a certain point, that a serum which would agglutinate a good agglutinator at 1-20,000 might not agglutinate the same after passage through four guinea-pigs above 1-400. After passage through more guinea-pigs, however, up to ten or eleven, he had found that the agglutinability was not further decreased. He had found also that the serum of a rabbit immunized with a bad agglutinator had agglutinated a good agglutinator well and the culture of immunization badly. A good agglutinator, he said, would always agglutinate well and a bad agglutinator badly, no matter what the origin of the serum. He said that heat applied at 70° C. for thirty minutes slightly weakened the agglutinins, 75° C. applied for the same time changed them to agglutinoids, and at 80° C. they were destroyed. Heat applied to cultures at 70° C. and up to 100° C. modified the agglutinable substance (agglutinum) so that it combined with the agglutinum but produced no agglutination (agglutinumoids). The agglutinumoids absorb about as much agglutinin as normal agglutinum. Fresh emulsions of agar cultures in salt solution, when heated, produced similar results, except that the agglutinumoids absorbed much more agglutinin than the normal agglutinum. Agglutinums in emulsions in 1 per cent. formalin were not modified by heat up to 80° C., but they were destroyed at 100° C. and agglutinumoids were not formed. Dr. Buxton further said that simultaneous inoculations of different kinds of bacteria produced, in rabbits, specific agglutinins for each kind. A rabbit, he said, immunized simultaneously to typhoid and paratyphoid and cholera and pyocyaneus, on treating the serum with typhoid bacilli and filtering, the filtrate would not agglutinate typhoid but would agglutinate the other three as readily as the control serum. This was true, also, of any two or three, so that he had been able to absorb all but one in a similar experiment.

On the Coagulation Time of the Blood of Nephrectomized Rabbits.—Dr. S. J. Meltzer, of New York, said that in a series of experiments carried out by Dr. W. Salant and himself on nephrectomized rabbits, it was found that the clotting of the blood was considerably delayed in these animals. Forty to fifty hours after nephrectomy the coagulation time was nearly five times as long as that of normal animals. These results suggested, he said, an investigation of the clotting time of human blood in various forms of nephritis.

Dr. Pearce confirmed Dr. Meltzer's findings and said that these results were particularly true in hemolitic serum.

Experimental Study of Decapsulation of the Kidney.—Dr. I. Levien, of New York, reported on this subject. He said that surgeons had accidentally cured nephritis by decapsulation of the kidney, and that this had led them to recommend it in cases of acute inflammation of the kidney with colic. The function of the capsule had, heretofore, been unknown, and he had studied the kidneys of dogs in an endeavor to throw some light on this subject. The history of the capsule suggests, he said, that it performs other functions than those common to the capsules of other organs. A kidney having its capsule detached swells, hence it is influenced mechanically by the intact capsule. By means of an instrument, which Dr. Levien had devised, he had studied the pressure exerted by the capsule and had at the same time studied by means of sphygmographic tracings the pulsations of the capsulated and the decapsulated kidney, comparing them with the carotid pulsations. Pulsation ceased in the decapsulated kidney. His experiments were unfinished, but he believed that the capsule has great influence upon the kidney and suggested the probability of the wisdom of nephrotomy in preference to decapsulation in certain cases of nephritis.

Neuroglia, Myoglia and Fibroglia Fibrils.—Dr. F. B. Mallory, of Boston, demonstrated with the microscope, neuroglia, myoglia, and fibroglia fibrils.

Stain Applicable to Differential Leucocyte Counts.—Dr. Onuf, as a guest, gave a preliminary note on a stain applicable to differential leucocyte counts in the counting chamber. The procedure, he said, is the same as that in counting red cells. The blood is drawn up to the mark 0.5 in a red blood counting pipette, but instead of diluting with Gowers' or Toisson's solutions (up to the mark 101) a staining fluid of the following composition is used for dilution: (1) 12 per cent. formalin (Schering, 12 volumes; water enough to make 100 volumes), (2) 1 per cent. aqueous solution of sodium chloride (c. p.), (3) one-half per cent. aqueous solution of eosine (yellowish),

(4) Unna's polychrome methylene blue. Equal volumes of these four solutions are mixed, preferably in the succession above given and then filtered. The filtrate is the fluid taking the place of Gower's or Toisson's solutions in the pipette. It produces within fifteen to thirty minutes at ordinary room temperature, quicker at body temperature, a different stain of the leucocytes, bringing out the protoplasm, nuclei and granulations. Dr. Onuf said that further experiments, especially with regard to eventual application of the method to lesser dilutions of blood such as 1-100 or 1-20 are still pending.

Lesions of the Nodular Form of Xanthoma.—Dr. G. McConnell presented for Dr. Joseph McFarland, of Philadelphia, a series of lantern demonstrations of a histological study of the lesions of the nodular form of xanthoma.

(To be Continued.)

THE AMERICAN SOCIETY OF CLINICAL SURGERY.

Second Stated Meeting, held March 18, 1904.

The President, George Emerson Brewer, M.D., in the Chair.

First Day—March 18.

After the business meeting, which was held at the Medical Department of Columbia University, the officers and members proceeded to the demonstration room of Professor Huntington.

Tumors of Salivary Glands.—Dr. F. C. Wood gave a demonstration and discussed the general pathology of the mixed tumors which are so frequently found in the salivary glands. After a short résumé of the studies which have led pathologists to consider these tumors as endothelial in nature, the speaker called attention to the fact that many of these growths contained flat epithelium and well defined glandular structures. It is therefore necessary to assume that at least some of the tumors contain epithelium and it seems probable that a large proportion of the growths are composed chiefly of epithelial tissues derived from the embryonic epithelial structures which go to make up the salivary glands and not of endothelium. The complex nature of the tumors was, in the opinion of the speaker, best explained by the assumption of an error of development by which cartilage and other mesoblastic structures were left in close proximity to the glandular tissue at an early period of embryonic life and the derivation of the cartilage was most probably from that of the branchial arches. Attention was also directed to the congenital defects which were not uncommon in these regions, and in some cases were directly connected with the mixed tumors. A certain similarity between the structures described and those found in the teratoid growths from the kidney, ovary, and testicle, was also brought out. The speaker then mentioned some of the clinical characteristics of the growths, drawing attention to the fact that many of the tumors were benign and recurred only when incompletely removed. Even after a recurrence a fairly good prognosis could be offered after wide excision of the secondary growth. Specimens were also shown of true carcinomata, sarcomata, and adenomata of the parotid, to illustrate the differences in morphology between these growths and the mixed tumors, while the clinical differential diagnosis between the various growths was briefly touched upon.

Dr. Churchill Carmalt gave a demonstration of the accessory salivary glands. He showed a large amount of material, demonstrating the comparative anatomy of these organs and discussed their morphological relations and significance.

Modified Murphy Button.—Dr. Joseph A. Blake then inserted his modified Murphy button between the stomach and duodenum of a dog. This button consists of two small ordinary buttons linked together with very light bars. Its advantages over the round button lie in the large size of the opening which it cuts, and second in the fact that its shape should enable it to be more easily passed than the ordinary form. It somewhat resembles a modification suggested by Murphy, but differs from it in that it is lighter in construction and particularly in the size of the immediate opening which it creates, the passage in Blake's button being much the larger of the two.

Wounds of Arteries.—Dr. George E. Brewer then demonstrated his new method for treating wounds of the larger arteries. This consists in the isolation of the wounded vessel, in the removal of all particles of its sheath, in the rendering of it absolutely dry with ether and alcohol and in winding upon it a cylinder of an elastic adhesive plaster specially made for this purpose. The demonstration was on a carotid artery and proved eminently satisfactory.

Mr. Donald Gordon, Jr., the student assistant of the Surgical Laboratory, demonstrated an ingenious device which he has made to facilitate the application of the gum elastic to the vessel.

McGraw Elastic Ligature.—Dr. J. W. Draper Maury demonstrated a modified method of performing gastro-enterostomy with the McGraw elastic ligature. He showed a series of specimens which had been prepared in the last year at the Surgical Laboratory, representing an attempt to demonstrate that the ligature could be so placed as to punch out tissue after the manner of the Murphy button.

After this demonstration, the Society repaired to the University Club where luncheon was served.

Gastroptosis.—In the afternoon, a clinic was held by Dr. Ellsworth Eliot, Jr., at the Presbyterian Hospital. Dr. Eliot showed two cases; women who had entered the hospital, each suffering from symptoms which pointed clearly to gastroptosis. In each he had adopted a new technic which he will publish in full in the near future.

He then showed an Italian whose tongue had been resected by a modification of Kocher's technic. Dr. Eliot thought that this method would prove very serviceable in certain forms of carcinoma of the floor of the mouth and distinctly stated that its use was limited. He then showed two cases of resection of malignant growths in the bowel. One had occurred at a rather unusual position, viz., in the ileum. The other was situated in the colon. In each of these cases the method of anastomosis was by end-to-end ligation, a special technic, the details of which will soon be published, having been employed. He showed radiographs of an open safety pin in the bronchus, which proved that spontaneous version of the pin had been effected. Dr. Eliot then operated upon a case of appendicitis in order to demonstrate the technic employed at the Presbyterian Hospital.

The Society was then escorted to Roosevelt Hospital.

Facial Paralysis.—Dr. Robert F. Weir showed three cases of facial paralysis which had been treated by grafting a section of the hypoglossal into the facial nerve. The result of this technic has been very gratifying, and the promise for the operation is most encouraging. Dr. Weir then spoke most interestingly of a number of cases he had had years ago and gave the details of the removal of a large number of foreign bodies from the bronchi.

Enterostomy.—Dr. Blake then performed enterostomy with his new button in a case which had presented alarming symptoms of gastric ulcer.

Many of the members of the Society and several guests were then entertained at an informal dinner at the University Club.

Second Day—March 19.

Hernia.—At 8.30 A.M. the Society convened at the Hospital for the Ruptured and Crippled, where Dr. W. B. Coley gave a hernia clinic. He showed a number of cases in children and others upon whom he had operated a varying number of years previously, and then demonstrated with an unusual show of speed the technic employed in the treatment of hernia at this hospital.

The Society was then escorted to the Hudson Street Hospital, where Dr. P. R. Bolton showed a type of an "Emergency Hospital." He then took the members to the New York Hospital, where he gave an operative clinic and demonstrated a large number of cases upon whom laparotomy had been done through the transverse incision.

At one o clock luncheon was served at the Arena, and after this Dr. Howard Lilienthal escorted the Society to the new Mt. Sinai Hospital at Fifth Avenue and One-hundredth Street.

The next meeting will take place in October, one day to be spent at Buffalo, at the invitation of Dr. Roswell Park, and one day in Cleveland, by invitation of Dr. G. W. Crile.

BOOK REVIEWS.

The Practical Care of the Baby. By T. W. Kilmer, M.D., Associate Professor of Diseases of Children in the New York School of Clinical Medicine, etc. With 68 Illustrations. F. A. Davis Company, Philadelphia.

This is one of the most practical of the books on this subject it has been our pleasure to see. All the details involved in the care of infants are described with an attention to minutiæ which might seem meticulous to one who has not encountered the blunders which even intelligent people sometimes make when beginning the bringing up of children. The illustrations, for the most part photographs, are numerous and useful. Especially instructive is one series showing the proper method of clothing infants at different ages and seasons of the year. Feeding is discussed in accordance with modern teaching and the home modification of milk is elaborated with complete working directions. The ordinary complaints of babies are described and appropriate household remedies mentioned as well as the indications which require the presence of a physician.

We recommend it warmly as a guide to young mothers and to nurses.

Modern Surgery. General and Operative. By John Chalmers Da Costa, M.D., Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia; Surgeon to the Philadelphia Hospital and to St. Joseph's Hospital, Philadelphia. Fourth Edition, Rewritten and Enlarged, with 707 Illustrations, some of them in Colors. W. B. Saunders & Company, Philadelphia, New York and London.

It is not altogether without regret that we see this book in its new form. Now that through rewriting and additions it has been brought into the class of the "big books" it has lost the great virtues of compactness and convenient size which it formerly possessed and which made it a wonder for the amount of information it contained in a small space. Still this disadvantage is more than compensated for by the new matter and new illustrations which have been added so that in its new dress of most artistic type it forms one of the most complete, practically useful and beautiful works on surgery at our command.

The progress of surgery is one of the notable events of the new century and it is interesting to see how closely abreast of the times the present volume is. The new vista which the studies of Ehrlich and others have opened up by their studies in immunity, hemolysis, etc., have received due recognition as well as the lessons military surgeons have learned in the treatment of gunshot wounds during the recent wars. The iodine sterilization of catgut devised by Claudius seems to have been overlooked in rewriting the section on suture material, though several others of the newer modern features are the descriptions of the baking apparatus for use in the treatment of joint affections and the new intestinal suture of Connell. Cystoscopy and prostatic surgery also receive up-to-date discussion.

It is a beautiful book and contains a higher percentage of actually useful, available information than many other medical works with which we are acquainted.

The Lymphatics. General Anatomy of the Lymphatics by G. Delamere; Special Study of the Lymphatics in Different Part of the Body by P. Poirier and B. Cunéo. Authorized English Edition. Translated and Edited by Cecil H. Leaf. With 177 Illustrations and Diagrams. W. T. Keener & Co., Chicago.

The anatomy and physiology of the lymphatics are being taken more and more into account in the surgery and medicine of to-day and any work such as the present which gives promise of more exact knowledge in these matters is to be welcomed gratefully. This volume which forms a section of "The Treatise of Human Anatomy," edited by P. Poirier and A. Charpy is divided into two parts. The first is concerned with the general anatomy and more particularly the histology of the lymphatic system while the second on the special lymphatics of the different sections of the body gives the regional distribution of the vessels and glands.

A large portion of the first part is given up to a very able discussion of our present knowledge of the leucocytes together with a most exhaustive bibliography of this subject. The minute anatomy of the lymphatics is treated with much clearness and the value of the letter press is greatly enhanced by numerous very good drawings, many of them colored.

The second half of the book has perhaps a more directly practical bearing and comprises researches of the greatest interest and value. Now that malignant disease of the internal viscera can be detected at a much earlier period and much more daring operative procedures can be attempted, the study of the lymphatic relationship of the organs becomes of the utmost importance in dictating the manner of operating and in indicating the chances of metastasis beyond the surgeon's reach.

The mechanical execution is excellent and the translation leaves nothing to be desired, so that it is a pleasure to commend the volume to all those interested.

Blood Pressure in Surgery. An Experimental and Clinical Research. The Cartwright Prize Essay for 1903. By George W. Crile, A.M., M.D., Professor of Clinical Surgery, Western Reserve Medical College, etc. J. B. Lippincott Company, Philadelphia and London.

The importance of this communication can hardly be overestimated. The therapeutic discord prevailing in our views as to the management of surgical shock and allied conditions is sufficiently shown by the almost diametrically opposed plans of treatment often advocated

by eminent men, sometimes even in the same hospital. The true significance of changes in blood pressure and the means at our command to combat abnormalities of this function have not received sufficient attention from a clinical standpoint at the hands of the experimental physiologists. The author has made this strangely neglected yet all important topic the subject of a most brilliantly conducted research and the startling nature of his conclusions, which appear almost heretical at first blush, proves how far from the truth our empirical observations have led us.

The book is divided into two general sections, the first devoted to the protocols of experimental work on 243 animals and the second to a more or less clinical study of the results obtained. The conclusions reached are so radical in nature that it is hardly fair to attempt to present them deprived of the experimental evidence which justifies them, but it may be said that in shock the essential phenomenon is a diminution of the blood pressure and that this is the result of exhaustion of the vasomotor centers. Strychnine, alcohol, nitroglycerin, amyl nitrite, are all either useless or even injurious, while saline infusion has a limited range of usefulness. Adrenalin in minute amounts administered continuously with saline solution (intravenously) gives excellent results with animals but its practicality has not yet been established. The most efficent means of restoring the enfeebled blood pressure to normal bounds is mechanically by encasing the entire body in a double suit of rubber between the walls of which air can be pumped and any desired pressure be produced and evenly distributed over the entire surface of the body. The method has found quite considerable clinical application with most satisfactory results.

The book is one that can safely be recommended to the thoughtful consideration of every one interested in major surgery, and, indeed, it is almost the duty of every worker in this field to acquaint himself with its contents, for it is only by extensive corroborative observations that a uniform system of treatment for this omnipotent enemy of surgical endeavor can be formulated.

A Manual of Operative Surgery. By Sir Frederick Treves, Bart., K.C.V.O., C.B., LL.D., F.R.C.S., Sergeant Surgeon-in-Ordinary to H. M. the King, etc. New Edition. Revised by the Author and Jonathan Hutchinson, Jr., F.R.C.S., Surgeon to the London Hospital. With upwards of 470 Illustrations. In two volumes. Vol. 2. Lea Brothers & Co., Philadelphia and New York.

What was said in regard to the beauty and excellence of the first volume of this magnificent work on its appearance a few months ago applies with still greater force to the present book. Such richness in paper and binding, such wide margins, such artistic typography and clean presswork have seldom been used in the embellishment of a medical work, while the reputation of the distinguished author is security for the fact that the jewel is worthy of its setting.

This volume is concerned principally with regional surgery and covers the wide field with a clearness of description and a directness in the choice of technical methods which shows the hand of the master at every turn. The one weak point lies in the sections on gynecology which, as is to be expected, are not quite up to the pitch of what our specialists have taught us to look for. With this exception the volume is most satisfactory and is pregnant with the forceful utterances of an authority.

The work is divided into the following sections: Plastic Surgery, Operations on the Neck, Operations on the Abdomen, Operations on Hernia, Operations upon the Scrotum and Penis, Operations upon the Rectum, Operations on the Head and Spine, Operations on the Thorax and Breast. Under these headings all of the important topics belonging to each are discussed in a most instructive and attractive manner. The chapter on excision of the tongue is particularly interesting; the author's preference is for a modified Whitehead operation preceded by a preliminary ligation of one or both lingual arteries with removal of the glands on the affected side. No application or dressing is applied to the stump of the tongue. Of the use of the cold loop or galvanic écraseur in these cases he says, "As a surgical undertaking *excision by the écraseur* has about it a distinct air of senility."

In the chapters on intestinal surgery full descriptions of the various applications of the Murphy button are given but, like most modern operators, the author prefers to dispense with it where possible. Under renal surgery we find no mention of the question of decortication for nephritis and the author differs from American surgeons in advising against passing the sutures through the separated capsule in nephropexy. The discussion on prostatic operations is not quite as modern as might be desired, as no mention is made of Bottini's operation with its numerous modifications. A suggestion that has much to commend it is the one that after breast operations the dressing be applied so as to keep the arm away from the side and allow motion at the elbow.

In every way the work fulfils any demands that may be made upon it; it is sufficiently lucid and simple in style to be agreeable to the student, and yet sufficiently technical to be of the utmost value as a book of reference to the occasional operator or to the specialist, who will find the many references to the literature most useful. Added to this is the sumptuous execution which, for a bibliophile, makes it a pleasure simply to handle the volumes.

The Man Who Pleases and the Woman Who Charms. By John A. Cone. Hinds and Noble, New York.

This interesting little book, contains a number of very practical hints with regard to that most important of qualities—how to be agreeable. Tact is said to be the basis of many a professional man's success. Unfortunately it is said to be one of the things that is inborn and cannot be acquired. There is no doubt, however, that where something of the quality exists already it may be improved by proper direction, and that even a very good imitation of the real article is not impossible for those who cultivate the realization of the significance of social usages. Mr. Cone's book may very well serve as a manual for those who feel the need of a guide, not in the ways of polite society, but of living in such a manner as to make life as pleasant as possible for those around them.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Medical Union No. 6. W. H. King. 12mo, 58 pages. Monograph Press Co., New York.

International Medical Annual, 1904. 8vo, 770 pages. Illustrated. E. B. Treat & Co., New York.

The Life of Wm. Pepper. By F. N. Thorpe. 8vo, 555 pages. Illustrated. J. B. Lippincott Co., Philadelphia and London.

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ORIGINAL ARTICLES.

ULCER AND CANCER OF THE STOMACH FROM A SURGICAL STANDPOINT.

BY WILLIAM J. MAYO, A.M., M.D.,

OF ROCHESTER, MINN.;

SURGEON TO ST. MARY'S HOSPITAL.

THE most important subject before the medical profession to-day is that of diseases of the stomach. Heretofore they have been considered almost entirely from a medical point of view and it is only of late that their surgical possibilities are beginning to be recognized.

The treatment of gastric disorders has been based upon chemistry, and for two decades hydrochloric acid and pepsin have formed the chief ammunition which has been fired at diseases of the stomach. During this time there has gradually developed a feeling that these means were inefficient and while many have turned toward new pharmacopeal combinations, there has also been an intelligent effort, not toward drugs, but rather to a better understanding of the functions of the stomach, and with this a different theory as to its pathology. It is the mechanics of the stomach which is usually at fault and not its chemics, and it is for this reason that surgery is rapidly invading the field. I would not be understood as saying that even the greater proportion of diseases of the stomach are surgical; but that the majority of serious lesions may become so can not be doubted, and it is also true that a very large proportion of chronic gastric disorders are due to faulty mechanics and must call surgery to their aid.

The stomach can be aptly compared to the magazine of a coal-stove into which at intervals there is rapidly placed a quantity of material for digestion. While it absorbs fluids and equalizes the temperature of the ingesta, it does not *digest* the food; but with a weak solution of pepsin and hydrochloric acid it *macerates* the ingested material, and the pyloric portion breaks up the food masses by a grinding motion. As the process is completed the product is turned into the small intestine where digestion and assimilation is accomplished.

The muscular action of the stomach is of a twofold nature, the fundus contracts rather slowly upon the food material, forcing it toward the pyloric ends, which grinds and pulverizes it into a harmonious whole, the fundus being the hopper, and the pyloric portion the grind stones. It can readily be seen that an obstruction at the outlet produces dilatation with retention or stagnation of the food, and this often results in fermentation and absorption of deleterious products. The extent of the disorder depends upon the degree of obstruction and the compensatory hypertrophy of the musculature of the stomach. Many of these cases develop a degree of hypermotility which equalizes the obstruction. In other cases a period of compensation alternates with muscle failure, exactly like valvular heart lesions and their effect upon the cardiac muscle. We see the same phenomena in obstructions at the outlet of the gall-bladder, and at the pelvis of the kidney, and again in the urinary bladder—all organs with a temporary storage function and a limited outlet. Even with moderate obstructive dilatation the victim begins to diet and in the main "diet" means restricted food supply, the attempt being to reduce the amount of work to be done to the minimum. In the extreme cases, the solids are first eliminated from the dietary because, as has been pointed out, the stomach does not assimilate such articles of food and the bulk increases the difficulty of passing the obstruction. Fluids, on the contrary, are absorbed to a certain degree in the stomach and also more easily pass the contracted outlet. Therefore, foods with much fluids and little residue are chosen.

The stomach may become enormously distended and even the absorption of fluids be reduced to small proportions. So true is this, that Crämer was able to demonstrate by the quantity of urine passed, the degree of dilatation and the amount of gastric function. He divides these cases into three grades, as shown by the urine collected for twenty-four hours. First degree, 1,500 to 1,000 c.c.; second, from 900 to 500 c.c., and third, all cases falling below 500 c.c., and further says that lavage of the stomach which contains much material, with urine below 500 c.c., may dilute the toxic products in the stomach and render them more readily absorbable. Tetany has its onset immediately following the use of the tube in many reported cases. The stomach should be emptied some hours before lavage is practised in such cases. That these products of retention and fermentation are poisonous cannot be questioned. We had one case in which gastro-enterostomy turned a great amount of such material into the small bowel and the patient promptly died from toxemia, which followed the absorption. The symptoms resembled the effect of cadaverin upon animals. Gastric tetany probably depends for its origin upon the absorption of retention products. The severe grades are the only ones which we have heretofore recognized. They have been exceedingly serious, as Albu in forty cases found thirty-one deaths. Mild grades, however, are much more common and apt to be overlooked. Muscle twitching, prickling sensations and so forth in connection with serious dilatation are to be looked upon as a warning and surgery should not be long delayed. Crämer has recently written exhaustively upon this subject.

The popularity of the stomach tube depends upon the mechanical removal of food remnants which would otherwise stagnate in the stomach; but it does not cure any more than the catheter used to relieve urinary retention or residual urine, cures the prostatic hypertrophy upon which the condition depends. It relieves the temporary obstruction and may aid restoration of compensation by giving time for muscular development; but our faith in the ability of gastric lavage, either plain or medicated, to cure mechanical obstructions has been shattered beyond repair.

It is not my purpose to discuss in detail the nature of the various obstructions, but rather to indicate the effect of such interference upon gastric motility and to call attention to the fact that serious or progressive obstructions are surgical conditions and that dilatation of the stomach and its degree is the sign post which tells us the proper course of action. If the lesser curvature is in normal position and the greater curvature of the stomach lies below the umbilicus, some degree of dilatation is present. If the stomach is prolapsed, the distance between the curvatures, demonstrated by air inflation, will readily show the amount of dilatation. The tartaric acid and bicarbonate of soda test is sudden and in certain cases has danger of rupturing a weakened gastric wall. With an ordinary Davidson syringe or bicycle pump and a stomach tube, the stomach can be easily filled with air and its outline marked upon the skin. Crämer says that any dilatation not vastly improved in four weeks under gastric lavage, dietary and massage for muscle building, should be subjected to operation. Loss of stomach motility in its lesser degrees, is not necessarily obstructive. For instance, in gastric atony and in the neurasthenic state, loss of motility is not infrequently neurotic in origin and often accompanied by hyperchlorhydria. These conditions carry with them stigmata that will not be easily overlooked and stagnation and retention of food does not occur for any length of time in such cases.

Turning from the most common causes of interference with the function of the stomach, due to obstruction of outflow, we come to the second great class of gastric disorders in which disease of the wall of the stomach prevents its reservoir function or limits its grinding power, that is ulcer and cancer of the stomach. The most common seat of these lesions is in the pyloric portion and they are intimately associated with the etiology of the obstructions, deformities and tumors upon which the dilatation depends. These latter conditions are to be looked upon as a result of ulcer or cancer of the stomach. There are, of course, many other causes of obstruction, such as valve formation at the pylorus, but they are the exceptions which prove the rule.

Ulcer of the Stomach.—Simple ulcer of the stomach is by no means the rare condition which we have been led to believe. The acute form with its classical symptoms, pain, vomiting, hemorrhage, local tenderness and hyperchlorhydria form a group of symptoms which is readily recognized, and the treatment is purely medical. Surgery has only to do with the complications, such as hemorrhage or perforation. It is altogether probable that the vast majority of acute ulcers heal, but a considerable minority fail to do so and constitute a share of the chronic ulcers.

Acute exacerbations of a chronic ulcer must not be mistaken for acute ulcer as is too often done, and the subsidence of the acute period taken for cure of the original condition. Chronic ulcer is frequently, if not usually, chronic from its inception, its course being marked by a period of symptoms lasting from a few days to weeks, to be followed by a longer period of apparent betterment, lasting some weeks or months. These patients go from one physician to another, each acute attack a medical cure, it is the old story of appendicitis and gallstones over again. Failure to stay well impels the victim to seek new aid and often enough each physician believes the cure to have been permanent. Ultimately the patient, unrelieved by legitimate medicine, much to our disgust, takes to the charlatan and patent medicine vender. These cases are surgical. They are chronic because treatment has been tried over and over again and has failed.

Etiology.—The etiology of gastric ulcer is obscure. There are three known factors of great importance: first, anemia; second, hyperchlorhydria; and third, mechanical injury. Anemia is certainly a very important element, particularly at the inception of the disease, a cute round ulcer being by no means a rare occurrence in the chlorotic state and the overcoming of the anemia often does much to establish a cure. In the chronic forms this anemia may be continued and depend upon a slow loss of blood. Murphy has pointed out its close resemblance to the pernicious type. In some cases the post mortem is the only way the diagnosis has been cleared up.

Hyperchlorhydria usually exists at some time in the history of peptic ulcer and in most cases at all times. That it is of the utmost etiological importance is shown by the frequency of duodenal ulcers of the peptic type above the opening of the common duct, with its alkaline discharges, and the occurrence of secondary peptic ulcer in the jejunum at or near the opening made by gastroenterostomy for drainage of gastric ulcer.

Mechanical injury is also an important factor as shown by the location of 75 per cent. of gastric ulcers in the grinding apparatus of the pyloric end of the stomach, although having not more than one-sixth of the exposed mucous membrane. It is for this reason that gastrojejunostomy has given such signal relief. The anemia is overcome by good feeding, the hyperchlorhydria by the rapid drainage of the gastric juices into the intestine with its alkaline secretions, and lastly the avoidance of irritating the ulcer by the passage of food over its sensitive surface.

Ulcer of the Duodenum.—Chronic ulcer of the duodenum should be classed with gastric ulcer and occurs in the first 2½ inches of the intestine.

It is essentially a disease of adult males. In 39 cases which have come under our care at the operating table, 32 were in males. In proportion to its frequency it is even more liable to perforation than gastric ulcer but also more frequently walled off because of its anatomical relations and its more fixed position. In some instances the symptoms of chronic duodenal ulcer cannot be distinguished from gall-stone disease, the location and the colics being strongly suggestive of biliary calculi. We have on several occasions operated for gall-stones and found duodenal ulcer. The pain and local tenderness, however, usually lasts longer in the latter disease. Of the combined series of gastric and duodenal ulcers which occurred in our experience, 12 per cent were duodenal, 88 per cent. gastric.

Symptomatology of Gastric and Duodenal Ulcer.—The symptoms of chronic ulcer are variable, but the chief one is pain,—painful digestion, not all the time, perhaps, nor at every meal; but a feeling of discomfort a considerable part of the day and at times severe cramp-like pains which in ulcer of the pylorus may amount to a sharp colic. If the ulcer extend to the peritoneum, symptoms of regional peritonitis may come on, lasting several days or, more rarely, leading to unprotected perforation. Points of perforation are usually protected, as shown by the frequency of extensive adhesions. Fortunately, in the large majority of cases of gastric and duodenal ulcer, the secretions are excessively acid, therefore relatively sterile, and general infection is less liable to occur than further down the intestinal canal. Vomiting is a late symptom and depends upon a complicating stenosis in the majority of instances. Hemorrhage in appreciable quantities is rare, although many anemias depend upon a continuous small loss of blood. As the majority of symptom producing ulcers are in the pyloric end of the stomach, the syndrome of Hartmann is usually present, that is, pain, hyper-secretion, gas and indigestion. Ulcers in the body of the stomach are frequently latent and the first knowledge of their existence may be a fatal perforation. Welch, in 793 cases, found 235 posterior, 288 lesser curvature, 96 anterior wall, 95 pyloric ring, while only 29 were found in the fundus and 27 along the greater curvature. It is interesting and surgically very important to note that in at least 20 per cent. of cases, more than one ulcer is present. A frequent combination is one ulcer anterior and another facing it on the posterior wall, or one or more ulcers of the stomach and one of the duodenum. Brinton, in 463 autopsies upon cases with ulcer of the stomach, found 57 with two ulcers, 16 cases with three or four, two cases with five and four cases with more than five.

Chronic ulcer is a disease of adult life and is comparatively rare in youth. The small, round and fissure ulcer is most frequent in the female, while the large irregular ulcer is more common in males. Friedler, in 2,200 autopsies found 20 per cent. of the female bodies with evidences of ulcer, and only 1.5 per cent. of men. Berthold, in 262 autopsies of ulcer cases, found 134 women and 128 men. Welch, in 793 autopsy findings, gave 60 per cent. women and 40 per cent. men, and this latter agrees very closely with our experience in somewhat over 300 operated cases. The series of large chronic irregular ulcers tabulated by Seymour Taylor gave 72 males and 28 females. This also agrees with our experience, although the preponderance of males was not so great.

The diagnosis of chronic ulcer is essentially clinical. The history and the physical examination, including outlining the stomach by air distention with the use of the stomach tube to develop stagnation or retention, give the most important evidence. The laboratory findings, while not worthless, are often contradictory and misleading. In over 1,500 cases which have been examined by my colleagues, Drs. Graham and Millet, 478 came to operation. The only test which had even corroboratory worth was that high values for hydrochloric acid argues for ulcer and low values for cancer; but even this is not to be relied upon. Otherwise, the microscopical and chemical findings, with the exception of the occasional presence of blood, were practically worthless. I do not wish to condemn such attempts for they will lead to great good and should be encouraged by all means; but at the present time we must be careful and not ask the laboratory to make our diagnosis, for if we do, we will ask in vain.

It should not be forgotten that ulcer of the pyloric portion of the stomach may form a well defined tumor and the anemia from chronic blood loss develop a cachexia which, with the tumor, may give the appearance of gastric carcinoma in a hopeless stage. No doubt many of these cases have died from a condition which was essentially benign. We have but to look over the literature to see the frequency of this mistake, a gastro-enterostomy permanently curing a patient in whom a supposed malignant tumor with stenosis proved to be benign.

Prognosis.—The mortality of chronic ulcer is given by Leube at about 25 per cent and he states that about half of the remainder will be cured. Debove and Remond estimate that 25 per cent. die directly from the lesion (hemorrhage perforation and so forth) and 25 per cent. additional from complications, such as tuberculosis induced by the anemia. In 500 cases reported recently at the London hospital, 211 were known to have had previous attacks, 18 per cent. died and 42 per cent. were not cured at the time of discharge, leaving 40 per cent. supposed to have been cured. There is also the further danger of cancer grafting upon ulcer base which is undoubtedly of frequent occurrence, although years may have elapsed between the ulcer and the malignant change. Graham, in 157 cancers of the stomach which came to operation at our hands, found a good ulcer history in over 60 per cent., although perhaps the malignant degeneration developed

years after the ulcer had healed. Futterer, Dunn and many others also insist upon the etiological importance of ulcer in cancer of the stomach.

Surgical Indications.—This leads us directly to the query, When should gastric ulcer be surgically considered? Leube says that from four to five weeks should cure gastric ulcers which can be cured medically. For those cases which have not developed obstructions, it would be best to try a Leube treatment (rectal feeding and so forth), but the bulk of these cases have employed various forms of treatment usually to temporary advantage; but with lack of permanent benefit, and are already in the chronic state. Such cases should be considered surgically and especially so if secondary complications, such as obstruction, dilatation, adhesions and deformities have developed.

Indications for the surgical treatment of gastric ulcer can be divided into two distinct classes; first, the ulcer itself; second, the complicating adhesions, deformities, obstructions and so forth. There are clinically three varieties of gastric ulcer: (*a*) The mucous erosion, limited to the superficial epithelium of the mucous membrane. (*b*) The round and fissure ulcer which is probably the most frequent and is limited to the mucous coat, excepting in perforative cases. It has the distinctive feature that it cannot often be located from the exterior of the stomach, sometimes a little thickening can be felt or some point at which the mucous coat does not glide on the peritoneal and muscular tunics in the normal manner. This variety of ulcer is often multiple and may lead to unpleasantness at the operating table—an ulcer accurately diagnosticated cannot be demonstrated to the mortification of the surgeon. (*c*) The large irregular ulcer invading all the coats of the stomach and easily recognizable by its thickness and the milky or opaque appearance of the peritoneum. This variety is often mistaken for cancer, especially as enlarged lymph nodes are to be found in the omenta, particularly in the gastrocolic omentum as pointed out by Lund.

The complications of gastric ulcer are many. For instance, adhesions, the separation of which may give relief but is open to the objection that it leaves the ulcer which caused the trouble uncured so that the adhesions usually reform. Separation of adhesions must be done most carefully, as it may be found that they have protected a perforation which may unfortunately be opened up. Obstructions usually exist at the pylorus but may obtain in the body of the stomach, forming an hour-glass contraction.

Gastric Drainage.—The keynote to the surgery of gastric ulcer is drainage, and the best place for this is to the left of the muscular pyloric portion. There are four methods of inducing gastric drainage: (1) The Heinike-Mikulicz pyloroplasty, which does not give satisfactory ultimate results in more than 70 per cent. of the cases. It has the misfortune of leaving the enlarged opening at a high level so that if the stomach be greatly dilated, the degenerated muscle must elevate the food to the high lying outlet. There are also liable to be firm adhesions binding it to the surrounding tissues. (2) Finney's gastro-duodenostomy. This is a most excellent operation, giving a large opening in the line of drainage. It is most useful in narrow strictures and least successful in open ulcer, as the food must pass the ulcerated area to reach the outlet. (3) Rodman's operation. Excision of the ulcer, would seem to be indicated in a large number of cases; but if so it must be combined with gastro-enterostomy, (*a*) because there may be more than one ulcer, (*b*) because a stricture often follows at the site of incision, no matter how made, (*c*) because it leaves the tendency to ulcer unchecked and new ulcers may form. Rodman suggests that the most sensible thing to do is to excise the entire pyloric end of the stomach, the so-called ulcer bearing area, closing the duodenum and stomach end permanently, and then do a gastrojejunostomy in the usual manner. This would meet all the objections to the excision of the ulcer and avoid the possibility of secondary cancerous change. (4) Gastrojejunostomy. All in all this method meets the indications most perfectly, although it is probable that Rodman's operation will be often considered in the near future.

There have occurred in the surgical practice of my brother, Dr. C. H. Mayo, and myself, up to April 1, 1904, 328 operations for the improvement of gastric drainage, divided as follows: 20 pyloroplasties, no deaths but seven secondary operations. Finney gastroduodenostomy, 40 operations, one death, no secondary operations. Gastrojejunostomy, 271, mortality in the benign series six per cent., with six per cent. of secondary operations; of these five were subjected to Rodman's operation. In the malignant cases there was 23 per cent. mortality after gastrojejunostomy. Our preference for ulcer is the posterior operation made by means of the suture, reserving the anterior operation either with the Murphy button or the McGraw ligature for the cancer cases and such cases of benign disease as present unusual difficulties to the posterior operation.

Cancer of the Stomach.—Gastric carcinoma is the most frequent form of cancer met with in the human body, statistics ranging from those of Welch who gives it as 21.4 per cent. of the total and second to the uterus, to Virchow who places it first at 31 per cent., and Haberlin at 40 per cent. of the total number of cases. Why has there been so little attempt made to cure these patients by the only known means, a surgical operation? There are three reasons for this conservatism, first, a belief that cure cannot be accomplished; second, that the mortality of radical operations is almost prohibitory; third, that the diagnosis cannot be made until the case is hopeless. Let us discuss these reasons more in detail.

First.—Can cure be accomplished by operation? McDonald found 43 cases cured by operation which could not be disputed; Murphy collected 189 cases operated upon radically by Krön-

lein, Maydl, Rydygier, Czerny, Morisson, Bevan and Mayo, with 26 deaths. Of these 17 survived three years, about eight per cent. This was reduced to five per cent. by recurrence after three years; but as many of the cases were alive and well more than two years, enough of these cases would by the law of averages survive to bring the percentage up to eight per cent. or more. Not only that, but Krönlein statistics demonstrated an average prolongation of life of fourteen months over the unoperated cases. Mikulicz, in 100 resections, had an average duration of life of one and one-third years. In our own experience of 43 radical operations for malignant disease of the stomach, all but two who survived the operation, lived beyond the year; one lived three years and seven months and several are alive and well more than two years after.

Second.—Is the mortality prohibitory? Billroth had a death rate of 60 per cent. He said shortly before his death that his later years had been sorrowed by the vast number of almost hopeless cases of cancer that appeared to be attracted to his clinic, and speaking of operations for gastric cancer said, "They left the operating table in shock, from which some of them recovered." These cases went to Billroth because he was almost the only one who gave them any chance.

The mortality depends largely upon the case. In an early operation upon a patient not materially reduced, the mortality will not exceed 10 per cent., and the average mortality at this time, taking the good and bad cases as they come, is not above 20 to 25 per cent. Much of the danger depends upon the adhesions to neighboring viscera. Haberkant had a mortality of 72.7 per cent. with adhesions and 27.3 per cent. without. Mikulicz had a mortality of 70 per cent with adhesions to the pancreas and 23.5 per cent. without such adhesions. In the 189 cases by seven operators quoted by Murphy, the mortality was only about 15 per cent.

Third.—Can the diagnosis be made in time by medical means? To this I say most emphatically, No, it can be surmised, but not often diagnosticated with certainty. Exploratory incision is practically harmless and a suspicion of gastric cancer should cause us to lay the facts before the patient and his friends and let them decide whether the only means of making a diagnosis shall be undertaken or not.

There are two points in the diagnosis upon which I wish to dwell, because I believe that their significance has been exaggerated. First, as to the presence of a tumor. It has been said that a tumor of itself marks inoperability. This is not true, a small movable tumor in the region of the pylorus is a favorable indication, because while cancer of itself does not give evidence of its presence in an early stage, the tumor does by giving obstructive symptoms which call attention to the mechanical conditions present. As a matter of fact, it is only those cases located in the pyloric region which are amenable to surgical intervention. This part is accessible to palpation and also to operative procedures. Pyloric cancer, by its location, introduces mechanical features which enable an early diagnosis. I would say here that the pylorus normally is near the middle line, rather than to the right as we have been led to believe, and also that the stomach lies in a much more vertical position than has usually been pictured, so that the pylorus is not much above the lowest point of the normal stomach.

In our experience, the larger number of cases with symptoms of gastric cancer in which no trace of a tumor was present at the pylorus and without symptoms of obstruction, have proved to be hopeless cases of cancer of the body which gave no early symptoms.

The second point upon which I wish to speak is that laboratory diagnosis of cancer of the stomach has little importance during the operable period because the disease is of too slight extent to interfere with the secretions. When it does so it usually means a hopeless involvement.

Radical extirpations of gastric cancer follow modern lines. The necessity of removing the regional lymph structures is recognized just as it is in the cancer of the breast. The first great improvement was due to the researches of Mikulicz, who showed that the blood vessels and lymphatics of the lesser curvature lay in the stomach wall and that it was necessary in every case to remove all of the lesser curvature, even if the growth was small and confined to the pylorus. Cuneo demonstrated that the glands of the greater curvature were near the pylorus and that the lymph current of this region was from left to right, showing that it is not necessary to be so radical on the greater curvature, especially as the blood vessels are set at some distance from the greater curvature to allow of rapid expansion and contraction of the stomach. The lymph nodes in this situation are set free from the gastric wall with the blood vessels. As to the operation itself, by tying the four blood vessels supplying the stomach at proper points, the extirpation can be made practically bloodless, much as in abdominal hysterectomy. The duodenum beyond the growth and the stomach at a healthy point proximal to it should be doubly clamped and the diseased part cut out with the actual cautery one-fourth inch from the holding clamps, preventing inoculation of the cut surfaces with cancer. The seared stumps should be sutured with catgut at once before removing the clamps, thus checking the hemorrhage, and preventing soiling of the field from the otherwise open viscera. Lastly, both the doudenal and stomach ends are buried by silk or linen sutures and an independent gastrojejunostomy made. Such an operation in a case suitable for extirpation can be done in an hour without loss of blood or shock. We have made pylorectomy and partial gastrectomy 43 times with seven deaths.

In conclusion let me recapitulate: Cancer of the stomach can be cured without excessive mortality only when exploratory operation is under-

taken. We will not discuss the palliative operations, as they are at best but a prolongation of a hopeless existence.

OTITIS MEDIA IN CROUPOUS PNEUMONIA; WITH THE REPORT OF A CASE OF ACUTE SUPURATIVE OTITIS MEDIA PRECEDING THE PNEUMONIA.*

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It is well known that otitis media may be a complication or sequel to any severe systemic disease, especially the acute infections. The relationship of the otitis to the systemic condition may be as follows: (1) One who has otorrhea develops the systemic infection; (2) one who has otitis previously but has been apparently well for a long while suffers a recurrence; (3) otitis as a primary manifestation, the systemic disease following; (4) otitis as a complication or sequel to the systemic infection; (5) the otitic infection as a cause of the systemic infection or general pyemia.

To take up these headings separately in reference to pneumonia, the figures referring to the headings as enumerated above, we note:

1. One condition may have little or no influence on the other, but more frequently the otitis is made worse by the pneumonic infection.

2. When one who has had an otorrhea during childhood, although for a long time it may have remained apparently well, free from discharge or pain, a recurrence during the pneumonia is frequent. It has been experimentally shown that the pneumococcus injected in the blood is far more likely to attack any part previously damaged by injury or suppuration than one the resistance of which has not been lessened. Meltzer[1] cites several cases where the pneumonia was preceded by a severe otalgia; all had had otitis media previously in the now aching ear. In all at the outset of the pneumonia, earache was the predominant symptom, this predominance, however, never lasted longer than one day. The pain disappeared on the second or third day or it lost its intensity and finally disappeared shortly before the crisis set in or with it. In none did the earache terminate in discharge. In one of Meltzer's cases the earache, preceding the pneumonia was so striking as to so deeply impress the mother that when one year later the boy had an earache, she sent for the doctor and said the boy again had pneumonia. Her guess proved correct.

3. There may be a simultaneous infection of the ear and lung. In a few cases the ear symptoms are manifested first. This was true in my case. The ear manifestations may be so severe as to so completely overshadow the lung process, that the pneumonia is not suspected until the otalgia is relieved by incising the membrana tympani or its spontaneous rupture. My case is an example of this.

4. The otitis may be secondary to the pneumonia, and this is their most frequent relationship. During the period of expectoration, the pneumococcus brought up by coughing, enters the nasopharynx, gains access to the Eustachian tube, extends by contiguity of tissue to the middle ear, and starts a suppurative otitis media. The occurrence of this complication during the height of the pneumonia, at the time when the patient's mind is dull and perhaps stupid or delirious, pain in the ear is not complained of, and the physician's attention is directed to the lung condition he attributes the symptoms of cerebral irritation and septic infection to the severity of the pneumonia. Hence the ear inflammation is unrecognized until the drum ruptures, revealing the middle-ear suppuration, or it is discovered at the autopsy.

5. In one of Wilson's[2] cases, the otitis was revealed at the autopsy, not being previously suspected. At the post mortem, consolidation and small abscesses in the lung were found. The middle ear was filled with foul-smelling pus. The pathological changes in the tympanum showed a suppurative process that had evidently existed much longer than the pneumonia.

Frequency of otitis in pneumonia.—Otitis media complicates pneumonia more often than is recognized. This is evidenced by autopsies held on cases that have died from pneumonia and by examining the ears of a series of cases of pneumonia. In most of the statistics lobar pneumonia was not differentiated from bronchopneumonia. The following statistics taken from Meltzer's and Wilson's articles, include both types:

In Netter's 20 cases of otitis, 14 had pneumonia; in Hartman's 36 cases of otitis, 10 had pneumonia. Rasch's 43 cases of pneumonia, 42 had otitis; Teichman's 73 cases of pneumonia, 34 had otitis and Wilson's 71 cases of pneumonia, 8 per cent. had otitis. Ponfick's 11 autopsies on pneumonia cases, 10 had otitis.

In the five of Wilson's cases, whose ears were examined at the autopsy, three had suppurative otitis media, which, apparently, was the cause of the pyemia that brought about the fatal result.

In a search of the literature I failed to find a single case where there was a simultaneous infection of the ear and lungs; the ear manifestations preceding the pneumonia. I wish therefore to record the following case. The otitis for two days entirely overshadowed the pneumonia; the latter not being suspected until the ear was relieved by incising the membrana tympani.

Case.—G. M., male; physician. Never had otitis media previously. On the night of Jan. 11, 1903, he was awakened with severe pain in the left ear, which prevented further sleep; some fever. I saw him in the afternoon of Jan. 12. The only symptoms complained of was a dull aching pain in the left ear. Temperature, 102° F., pulse 90, respirations 27. The tympanic membrane was red and injected but there was no bulging or other evidence of fluid in the middle ear. Nasal examination revealed slight coryza, septum deviated to the right, and right nasal obstruction.

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Increased nasopharyngeal secretion. Saline purgatives, bromides to produce sleep and phenacetin for the pain and fever, were administered. Jan. 13. Rested badly during the night, slept but little, dreaming and awaking with starts; dull pain in the ear constant. During the day pain had subsided, patient resting fairly well; only a feeling of discomfort in the ear. Temperature 103.4° F. No bulging of the tympanic membrane, redness lessened, coryza unchanged, general aching throughout the whole body. Symptoms indicated influenza; this, however, proved incorrect. Jan. 14. Pain in the ear recurred in the night, increasing in intensity; chilliness and flushing alternating; general restlessness. Temperature taken by himself during the day at irregular intervals, varied from 103 to 105° F. Headache worse in the left half of the head, continued coryza. The tympanic membrane was then injected and bulging. I incised the drum and much fluid escaped. In ten minutes all pain had ceased and he felt perfectly comfortable. A small gauze dressing was applied. The discharge was so great as to wet the dressing in three hours. I was called back and applied a large dressing. When I left him at 11 P. M. the temperature had dropped to 100° F.; the patient was comfortable and thought he would sleep. At 3 A.M., however, he was awakened with pain in the right side of the chest. This increased during the remainder of the night and forenoon. Dr. A. A. Stevens was called and diagnosed croupous pneumonia. Dr. Stevens took charge of the medical treatment. The highest temperature after the paracentesis was 104.6° F. The decline was by lysis from 103.8° F. at 8 P.M. of Jan. 18, to 98 at noon of Jan. 20 and varied after that time from 97.8° to 99.2° F. until Jan. 30, when convalescence was fully established.

The discharge from the ear continued throughout the course of the pneumonia; being greatest during the height of the pneumonia and gradually lessening as the pneumonic manifestations subsided. After the lung had cleared up and the temperature remained normal, the discharge ceased and in three days the perforation in the tympanic membrane healed. I examined the ear again recently and found the drum normal in appearance, unrestricted in mobility. At times, in cold, windy weather, there is slight pain in the previously affected ear, but no more so than in others who have never had otitis media.

I regret no bacteriological examination was made. I cannot, therefore, positively assert that it was a pneumococcic otitis. But the course of the two conditions were simultaneous, the height of one corresponding to that of the other, and both subsiding together leaves no doubt in my mind that there was a simultaneous infection of the middle ear and lungs, and by the same cause. The ear symptoms developing first and overshadowing those of the lung.

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HEPATECTOMY FOR TUBERCULOMA OF THE LIVER.*

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The operative treatment of surgical affections of the liver has been the outgrowth of the past two decades. Although abscesses and cystic growths had long been treated by surgical intervention, the surgery of solid neoplasms necessitating resection of the liver, was not undertaken until the experiments of Tillmans, Ponfick, Gluck and Cecherilli had demonstrated the compatibility of even large resections with continuance of function, and the further demonstration of the rapid degeneration of the liver tissue.

Since Lins in 1886, and Langenbuch in 1887 removed large movable portions of a corset liver, many operations have been performed upon this vascular gland. The most complete compilation of cases thus far published is that prepared for Keen by Spencer, Cushing and Downes.[1] The cases of resections numbered 76 in 1889. Cases have since been recorded by Elliott,[2] Beck,[3] Kocher,[4] Fillipini,[5] Tricomi,[6] Langer,[7] Legueu,[8] and Nauman.[9]

In gleaning the literature of this subject it becomes at once apparent that it is difficult to make a distinction for statistical purposes between cases in which the liver tissue is merely incised for the removal of an enucleable growth, and those in which a considerable portion of the liver tissue wherein the neoplasm is imbedded, is the essential feature of the operation. Keen has carefully attempted to exclude cases of hepatotomy, including in his table only cases in which resection was done. According to this table the mortality of all liver resections is 15 per cent. According to the statistics of Terrier[10] 10 out of 42 cases died from the operation, a mortality of 19.23 per cent. An analysis of the last 17 cases of Spencer and Cushing's table will show that resection for carcinoma has a mortality of 50 per cent. Of these cases recorded only three entirely recovered from the operation; one died on the third day, one after six weeks and one after three months.

Doubtless a number of cases reported as recoveries after resection for carcinoma have in reality been cases of gumma. Such, for example, was the fact in the celebrated case of Lücke, in which he removed the left lobe of the liver. Madelung[11] subsequently showed the tumor to be a syphilitic gumma. This perhaps accounts for the permanence of the cure. Elliott states that of nine cases operated on for syphilitic tumor only two died. According to this writer in 12 cases of malignant disease recently resected, eight for carcinoma and four for sarcoma, one died from the operation and two were known to have no recurrence at the end of two years. One of these is the case of Lücke to which allusion already has been made. The case of Fillipini re-

* Read before the Southern Surgical and Gynecological Association, December, 1903.

sected for adenoma had a recurrence after three and one-half years. From personal communications from Keen, Elliott, Monks and Beck, I am enabled to report that there was a recurrence in each. Including the cases of Beck and Kocher, one death and one recovery and the one recorded below, supposed primarily to be cancerous, there are 16 cases with three deaths.

In all of these cases the growth was supposed to be primary, as it of necessity must be if at all operable, and in the form of a single tumor. That this is not always possible will be shown in the following case. If one considers the fatality of solid tumors of the liver, excluding gummata, the statistics presented, although far from promising for the permanence of the recovery, may still justify resections for solid tumors of the liver limited in number and position. On resection of the liver for solitary tuberculoma, I have been unable to find any literature. Believing that in a field of surgery where justification of operative interference and the technical methods are still somewhat debatable, every case, especially if unfavorable in its result, should be recorded. I beg to submit the following report:

Male; aged thirty-six years. First examination October 18, 1903. Admitted to hospital October 21, 1903. Both parents are living and in good health. Brothers and sisters all living. History as to lues negative. Ten years before onset of present malady had left testicle removed for tuberculosis. Since then the patient has been in excellent health until four months ago. He has been married six years and has one child, one year old and healthy. There is no history of miscarriage. In November of 1902 the patient once consulted me for a pain in the right loin which proved to be an ordinary lumbago. During the past four months he experienced a sense of weight and then of pain in the pit of the stomach. This he believed to be some form of dyspepsia. Although spare of habit, the patient has noticed some little loss in weight. He has not vomited during his illness nor has he been nauseated at any time. In the past two months he noticed a tumor growing under the tip of the sternum.

Physical examination.—Man of sallow hue of skin, but without traces of lues. Weight 120 pounds. Heart and lungs normal. Urinalysis normal. On examining the abdomen, a tumor is at once seen in the epigastric region. It can readily be palpated through the thin abdominal wall. It is irregular in outline, its long axis corresponding to the border of the left lobe of the liver. Its short axis, which is about two inches long, has its upper end removed about two inches from the tip of the sternum. The tumor seems very mobile, as it moves very distinctly with respiration. The percussion note over the left tumor is distinctly dull; and the dulness is directly continuous with that over the liver. Below and to the left, the dulness is sharply defined against the tympanitic resonance of the stomach and intestines. Examination of the abdominal viscera including the rectum reveals nothing abnormal. An examination of the stomach by Dr. Ramsey showed it normal in motility and secretion.

Diagnosis.—Tumor of the liver, probably primary in character and of cancerous nature. This diagnosis was concurred in by Professors Osler, Hare and Forchheimer.

Operation October 23, 1903. Ether narcosis. An incision in the midline from the ensiform cartilage downward and about four inches in length at once revealed the tumor which was imbedded in the left lobe of the liver. The omentum was adherent to the free border and was secured and divided between double ligatures of fine silk. This accomplished, the pylorus and most of the stomach was carefully examined and found free from disease. No lymph nodes were found in the lesser or gastro omentum. What was felt as the tumor mass was now found to be the left lobe of the liver, hardened and nodular on its lower surface, but quite movable. Since the tumor appeared malignant and therefore unsuited for enucleation, I determined to remove it by resection if I could be reasonably certain of its being a solitary growth. To this end an oblique incision three inches in length was made to the right. All of the under and most of the diaphragmatic surfaces of the liver were thereby placed within touch. A second tumor was not felt.

By gentle traction the left lobe of the liver was brought into the abdominal wound. It was difficult to hold it, so I therefore concluded to follow the method successfuly adopted by Lücke and others in completing the operation in two sittings. To this end two large, blunt-pointed bullet probes were passed at right angles through the thickness of the liver, an inch or more beneath the tumor mass, and an elastic tube thrown around the liver to form a pedicle. The lower part of the wound was closed in the usual way, the upper part lightly packed with gauze. The patient left the operating table in excellent condition; pulse 82.

October 24. During the morning the dressings became saturated with blood. When they were removed it was found that a quite profuse bleeding was going on. There was great thirst; pulse 120. Under ether anesthesia the wound was examined and the source of hemorrhage sought. It was found that the elastic tourniquet had forced the skewers through the liver tissue, thus producing slight lacerations from which the hemorrhage came. The band was therefore removed and by means of one of the skewers a very heavy ligature was made to take its place. There was no further bleeding. With the thermocautery the left lobe was now cut away without the further loss of even a drop of blood.

During the first forty-eight hours after the operation the condition of the patient promised much. There then supervened a vomiting and hiccough which could not be controlled. From the third day the vomitus consisted chiefly of blood. There was neither pain nor abdominal distention indicative of peritoneal infection.

Death followed on the sixth day after operation, probably from necrosis of the gastric mucosa from retrograde thrombosis of the omental veins. A partial autopsy was made. Dr. Carl Hiller reports on this and on the nature of the tumor as follows: The excised piece of liver is cone shaped with the apex representing the extremity of the left lobe, and the base artificially produced by the incision with the thermocautery. This base measures 32 cm. in circumference, 9½ cm. in its longest and 8 cm. in its shortest diameter. The surface is smooth and unaltered except at one portion which when the liver was undisturbed in the abdomen was on the under surface close to the anterior sharp margin. Here there is a nodule of grayish-white color standing out in bold relief against the surrounding liver tissue, which is of a normal color and consistence. The nodule when a cut is made into it at right angles to the surface of the liver, presents an ovoid surface of firm consistence throughout and is sharply defined from the adjacent liver substance. This nodule measures on its cut surface 23 mm. in its shortest and 26 mm. in its longest diameter.

On examination after death the remaining portion of the liver showed that where the elastic band had compressed it, there was much discoloration. Other than the presence of a similar nodule half the size of the one already described, nothing abnormal could be detected. This nodule was in the right lobe on the upper surface of the liver close to the peritoneal reflection. With the exception of a slight inflammation about the stump of the liver, nothing abnormal could be detected in the abdomen.

An examination of the specimens made from the nodule by the microscope reveals connective tissue in large amount. Both fully developed and forming connective tissues are found. The youngest connective tissue is represented by loosely packed spindle cells which lie by the side of cells with large vesicular nuclei. These are believed to be epithelioid cells derived from connective cells. Here and there, but not very frequently, can be noticed a giant cell with peripherally situated nuclei and a degenerated center. Blood vessels exist only as capillaries which are limited to the outer portions of the nodule. It is here that the nodule is most cellular, so that the appearance of granulation tissue is presented. Separating the granulation tissue from the most central portion of the nodule are more matured connective fibers, which at places are quite dense. The center of the nodule is made up of a homogeneous necrobiotic area of large extent, which contains here and there a few cellular elements.

The diagnosis of solitary tubercle was made, although the tubercle bacillus could not be demonstrated in the specially stained sections.

Remarks.—In connection with the case reported, I would direct attention to two questions, one involving that of diagnosis, the other that of the technic necessary to forestall hemorrhage.

The diagnosis before operation was that of primary hepatic tumor. This was made with the full knowledge of the great rarity of such tumors. Kehr in 600 laparotomies found only one of this nature. Of cancer not more than one in 64 is primary. Man[12] found 246 secondary and only four primary cancers. The most extensive manual and visual examination of the liver possible at the time of operation failed to reveal a second growth. Nevertheless the autopsy showed such a lesion in the right lobe of the liver, where it could not be felt intra-vitam. The very serious difficulties hampering the pathologist in coming to a conclusion as to the nature of the growth when diligent study of sections is made will show the difficulty of the operator in determining the nature of a solid growth, while the operation is in progress. At the time of the operation it was believed that the tumor herewith presented was a primary carcinoma. A more careful examination makes it almost certain that the case is one of large tuberculoma. Solitary tuberculous tumors of the liver, although described by pathologists, are exceedingly rare. I believe this to be the first case in which a resection of the liver was made for a tuberculous tumor.

In regard to the technic of hepatectomy, it may now be laid down as a rule that immediate closure of the abdominal wound is to be condemned. In the cases of Langenbuch and Wagner severe secondary hemorrhage followed this procedure. Langenbuch had the temerity to reopen the abdomen. Even when the intraperitoneal method of treating the wound is practised, a gauze tampon as used by many surgeons including Eiselsberg, Israel and Keen, ensures the safety of the peritoneum against contamination from bile and against concealed bleeding.

The extraperitoneal method adopted by me in the case reported has been followed according to Tricomi in about 37 per cent. of all hepatectomies. Of course, it is applicable only to cases where a pedicle can be formed. Following the method of Lücke, an elastic ligature was used and this was held in place by skewers. It did not prevent bleeding because of the cutting of the rubber constricting band. It does not seem to me, however, that the exitus in this case can justly be ascribed to the hemorrhage. As to the safest means of preventing this when the intraperitoneal method is to be followed, operators are still at great variance. The thermocautery has very many advocates but is considered unsafe by Kocher. Clean excision and careful ligation of the large veins with catgut, as done by Heidenhain, Keen and others, permit the reduction of the liver wound by approximating its peritoneal margins. The experiments of Kusmetzon and Penzky have shown that the tying of hepatic veins of transfixion sutures is, at least in animals, an easy method of arresting hemorrhage. This method, together with gauze packing for added safety, seems to me an ideal one where applicable. In two cases Kocher used pylorectomy clamps on each side of the mass to be removed, crushing through the liver tissue. The mass included between the forceps was removed with a knife with-

out much bleeding. The forceps were left in position forty-eight hours. In one of his cases, however, a fatal prolapse of the intestine occurred through the wound.

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THE RELATIONSHIP EXISTING BETWEEN OPHTHALMOLOGY AND OTOLOGY AND DENTISTRY.*

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When requested to write something for this society upon the relations of odontology to ophthalmology and otology, I assumed that the invitation, was not so much an honor to me as the manifestation of a strong desire on the part of this society to be again addressed by some one possessing the name of Allport. Many gentlemen in the room this evening were my father's personal friends; some are here who did not know him. But whether knowing him as an associate and colleague or belonging to a newer generation which did not know him at all, whether trusting him and agreeing with him in his strong and undisguised views concerning dentistry and its destiny, or disagreeing with him and considering him overzealous or too enthusiastic, I am confident you must all unite with me in regarding him as one of the world's great dentists, and as a man whose honesty, integrity and purity of purpose can never be brought into question. I am sure it would gratify my father immensely if he could know that a dental society had invited his son (a physician) to address it upon the interdependence existing between Medicine and Dentistry. For those of you who knew my father, or have followed his life, know that he lived principally for one object, viz, to see dentistry acknowledged throughout the length and breadth of the civilized world as a legitimate specialty in medicine, even as ophthalmology or neurology is so considered.

To this end and in order to make the idea symmetrical, he believed that dental schools should have no existence except as post-graduate institutions, that those desiring to become dentists should first take a degree as a doctor of medicine, and should then pass into a dental school to receive special instruction in his chosen profession. He advocated and secured the establishment of dental chairs in medical colleges; he was largely instrumental in the establishment of a dental section in the American Medical Association, and in the International Medical Congress. Besides these important labors, he was a practical dentist who had few equals and, I believe, no superiors. He was a friend of good and conscientious work wherever found, and was always a kindly and honest advisor to young, struggling and ambitious colleagues; he established fees for dental services that have been a lasting benefit to dentists in Chicago and elsewhere; and I think you will all unite with me in saying that the benefits which he conferred upon dentistry are far-reaching and will never die.

I trust you will pardon this eulogy of my respected father, which some may regard as in poor taste, but the pleasant conference between this society and myself seemed a not inappropriate occasion for me to speak the thoughts which lay uppermost upon my mind concerning his life and work, and to pay a tribute to his memory, which I trust, nay believe, has not fallen upon unsympathetic ears.

It surely requires no strength of the imagination to assume a distinct connection between ophthalmology, otology and odontology. No portion of the body is a kingdom in itself, independent of other portions. Cardiac affections may permeate every nook and cranny of the human organism, and the same may be said of hepatic, spinal, uterine and other diseases which have their principal pathological centers in some particular section of the body. No argument is necessary to convince us that diseases of the teeth and mouth may produce pathological changes in the organs of sight and hearing, and possibly *vice versa*. We know it because we have seen it over and over again, and an article on this subject is only valuable as an effort to emphasize and reiterate well-known facts and to crystallize them into definite and tangible form, for, although these clinical data stand undisputed, it is much to be regretted that ophthalmologists and otologists are prone to neglect carelessly the prolific etiological influence of the mouth.

Diseases of the mouth may produce pathological changes in the eye or ear by one of two channels, by direct continuity of tissue, or by reflex irritation. We must not, however, lose sight of the fact that many diseases whose underlying cause has been ascribed to an elusive reflex phenomenon, have been shown to originate in an actual migration of infective microorganisms along the fibers of nerve tissue. Neither should we allow the pendulum to swing too far the other way in this age of doubt and materialism, to the elimination of *all* reflex pathological conditions, for it is surely difficult to harmonize the theory of septic infection with prompt disappearance of subjective and objective phenomena, upon the removal of the offending cause, such as a tooth, for instance. As illustrating the point, Milliken reports a case of healthy man who contracted two attacks of iritis: The first came on with the cutting of a wisdom tooth and disappeared upon the subsidence of the gum inflammation; the second after losing a filling in the third molar

* An address delivered before the Chicago Dental Society, December, 1903.

upon the same side as the affected eye, and was immediately relieved after the tooth was excavated, sterilized and filled. There was no apparent septic invasion of the iris, and the prompt disappearance of inflammation upon the removal of the irritating cause would seem to argue against the theory of septic migration.

As a still clearer instance of the actuality of reflex influence, Neuschüler, of Turin, reported a case in the *Recueil d'Ophthalmologie* for August, 1899, of a man who noticed that after prolonged use of the eyes he suffered from an intense pain in the orbit which, later would invariably spread to the teeth and become so severe as to necessitate cessation of eye work; a correction of his refractive error by glasses relieved all his symptoms. In the *Annals of Ophthalmology and Otology* for October, 1895, Foucher, of Montreal, reports the case of a man fifty years of age, who had a decayed, aching and broken molar tooth. He developed a keratoscleritis and conjunctivitis, together with herpetic eruptions on the cornea, and a little above the eyebrow along the sensitive branches of the ascending frontal nerve. The tooth was extracted and permanent relief promptly obtained. Foucher also reports another case of a woman age twenty-one years, who had an irritable wisdom tooth, accompained by great pain in the eye and optic neuritis, with total suppression of vision. The tooth was extracted and a speedy cure followed. Samuel Theobald, of Baltimore, reports a case in the *Medical Record* of Feb. 25, 1883, of a man, aged twenty-six years, who contracted a suppurative inflammation about the root of the left upper lateral incisor tooth, the pulp of which had been previously destroyed by a dentist. The tooth was decayed but not painful. The pupil of the left eye became dilated and paralysis of accommodation occurred. The tooth was extracted and the ocular affection was soon cured.

Theobald in the same issue reports a very remarkable history of a man thirty-five years of age, the crown of whose right upper lateral incisor being broken off, inflammation around the root and alveolar process followed. Both pupils speedily became immobile and paralysis of accommodation took place together with retraction of the lids of the right eye. His taste was impaired. The tooth was extracted and the morbid conditions were less severe, but a cure was delayed from time to time by root and alveolar inflammation of other teeth. Each time a tooth was extracted the ocular conditions improved but fresh exacerbations occurred as the inflammation was continued from one tooth to the other. A cure was not accomplished until all the diseased teeth had been extracted.

It certainly appears as if in this last case of Theobald's we may at least feel we have had a striking example of reflex ocular disease due to persistent irritation of a branch of the fifth nerve. The theory of cell migration seems hardly possible with a history of such frequently recurring ocular explosions, accompanied by complete cure upon a removal of the etiological factor. Sewell claims to have seen the development of a cataract after extracting a tooth, although one case of this nature hardly seems sufficient basis for an opinion. Neuschüler in the *Jahrbuch für Augenheilkunde* 1888, p. 403, reports a case of incorrect balance of the ocular muscles which appeared to act as an etiological factor of toothache, as the latter was cured by a correction of the muscular anomaly by the use of prisms. Knies claims to have occasionally cured nictitition by the removal of a painful tooth, and Gasselin makes similar assertions concerning supraorbital neuralgia. Amblyopia and amaurosis are quite frequently reported as caused by irritable teeth by Lardier, Gill, Metras, Samelsohn, Keyser and others, and Knies observes that when the symptoms appear without any other visible lesion, the connection may be taken for granted. The majority of dental reflex disturbances of an ocular nature, however, seem to be those of diminished or suspended accommodation, and Schmidt in the *Archives of Ophthalmology*, Vol. XIX, p. 107, has noticed 73 cases of weakened accommodation out of 92 recorded cases of ocular disturbance with dental etiology, and claims that such reflex phenomena are especially frequent in young people. It is indeed a matter of common observation that many of the eye and ear diseases of infancy and childhood, notably phlyctenular keratitis and conjunctivitis and acute otitis, are apparently caused by teething and defective teeth, frequently accentuated by the entire absence of parental supervision over the mouth and first teeth of growing children.

Who shall gainsay the theory that one reason why children are so prone to eye and ear affections is, not only the occurrence of exanthematous and children's diseases, but also the presence of the physiological and pathological condition to which reference has just been made? It might indeed be difficult to prove that the discouraging and prolonged interstitial keratitis so often accompany the pegged, softened, serrated and sensitive teeth of Hutchinson, are dependent entirely upon the underlying syphilitic taint. I think it is not at all impossible that an etiological factor might also be found in the characteristically diseased teeth, almost if not quite invariably present in these cases, and one reason why interstitial keratitis of this nature is so stubborn and prolonged in its clinical history may be found in the equally and coincidentally stubborn and prolonged morbid condition of the teeth. Schmidt is of the opinion that many morbid ocular conditions of dental origin are dependent upon a nervous relaxation of the ocular blood-vessel walls, thus allowing an abnormal amount of blood to remain in the eye and producing various paretic and other conditions, such as sluggish pupils, loss and spasm of accommodation, congestion of the retina, uveal tract and optic nerve, or even glaucoma, etc. Kneiss thinks that when loss of accommodation occurs during a toothache it probably results simply from the lack of vigorous innervation due

to intense suffering. He also thinks that muscular insufficiency and diplopia, which are occasionally observed, may also be explained as paresis due to enfeebled innervation, a theory which can be readily understood as an easy and rational explanation of some at least of the clinical phenomena.

We have all seen a severe toothache produce neuralgia, redness of the eye and excessive weeping, but we must not be too quick to conclude that the tooth is an etiological factor, not indeed, until the neuralgia and ocular conditions promptly disappear upon cure of the dental disease. The outlines of cause and effect, however, are sometimes beautifully demonstrated, as for example in an instance cited in 1885, by Hutchinson who observed a marked case of lagophthalmos from spasm of the levator palpebræ superioris, which promptly ceased upon the removal of an aching tooth, and Vossius in the *Archives für Ophthalmologie,* Vol. 33, mentions cases of exophthalmos developing from serious infiltration of the orbital tissue, which disappeared rapidly after extracting a diseased tooth. Instances of this nature have also been observed by Burnett in 1885 and Pagenstetcher in 1884, and Dimmer in the *Wiener medicinische Wochenschrift* for 1883, p. 299, claims to have seen metastatic choroiditis produced by the reflex irritation of extracting a tooth. Again referring to Kneiss, he notes that pain in the upper teeth on the same side as the affected eye is a frequent symptom of the so-called ciliary pains of keratitis, but particularly of iritis and cyclitis. Less frequently there is pain in the teeth of the lower jaw on the same side, and still less frequently in those of the other side; these are cases of irradiation of pain to adjacent nerve twigs.

Neuralgic toothache may be the prodromal sign of glaucoma. It must not be forgotten that the same general nervous supply extends both to the teeth and the eye, not only through the medium of the fifth pair of nerves, but also through the sympathetic system, and it is not difficult therefore to see how amblyopia, amaurosis, iritis, keratitis, conjunctivitis, strabismus, cycloplegia, etc., may be produced by diseased teeth of the upper, and even of the lower jaw, and also by poorly and improperly adjusted sets of artificial dentures, and malposition of the wisdom teeth.

While diseases of the ear of reflex origin dependent upon mouth diseases are not so well cut and clearly defined and recognized as ocular abnormalities, still they constitute a potential factor in aural histories, and must never be eliminated by one who makes careful examinations of his cases, for it is possible from time to time to find in the mouth the neglected and possibly unsuspected cause of some aural disease. I have used the word "unsuspected" but would not have it interpreted in its broadest sense, as I am personally exceedingly sceptical of the probable existence of an absolutely quiescent etiological condition. I regard it as very improbable that a diseased mouth will cause reflex or eye disturbances without the existence of some palpable morbid oral condition manifested both subjectively to the patient and objectively to the physician. This to my mind is the cheerful side of the otherwise mysterious and unfathomable history of reflex power. Without this probability the position of the careful diagnostician must oftentimes be wellnigh without hope, and attended by a helpless groping about in the Egyptian darkness of hidden and unknowable reflex pathology. In other words, if a diseased tooth is producing reflex eye or ear disturbances, I believe it will ache, sometimes more, sometimes less, sometimes being practically quiescent, but ache, and that a careful examination of the patient will disclose this fact, and clearly demonstrate its position as a source of disease. Therefore when I use the word "unsuspected," I mean "unsuspected" by the patient, for even though he has had a toothache or an otherwise known mouth disease, he does not associate it with his eye or ear disease because, like Kipling's "Vampire," he "does not understand," or "unsuspected" by the physician, because he is careless in his examination and diagnosis, or indisposed to attach much importance to oral diseases. The same pathological conditions of the mouth which will produce reflex eye diseases, and to which reference has already been made, will also cause reflex aural affections, and reversely, ear diseases may produce intolerable toothache. The terminal distribution in and about the mouth of the sensory and motor branches of the sensitive trigeminous and its associates with the great sympathetic, connects the teeth with the entire aural organism, and explains many of the reflex disturbances developing from the oral cavity.

The range of ear diseases produced in this way is much more limited than is the case with eye diseases, owing probably to the fact that there are fewer affections of the ear than of the eye, and also because the eye is more sensitive and susceptible to nervous conditions than the ear. Such aural affections are principally myringitis, earaches, sensitiveness of the ear canal, hyperæsthesia of hearing, deafness, furuncles and eczema of the ear canals, especially in children of a tuberculous or strumous diathesis, etc. The frequent occurrence of such aural affections, especially otalgia, with the teething of children, and its almost immediate relief by lancing of the gums, is of such common observation as to excite no comment. In lancing the gums under such circumstances, the incision should be deep so that the tooth may be absolutely liberated, for the pressure between the gum and the tooth crown is not the essential etiological factor, but the pressure at the root ends on the branches of the fifth cranial nerve, when the trouble is in the upper jaw, or on the inferior branch when in the lower jaw.

I have no doubt that careful examination of patients, both young and old, with such etiological factors in mind, would disclose the cause of many aural affections. Baldwin, in the *Journal of the American Medical Association* for Jan. 31,

1903, records seven cases of earache with no evident cause but exposed tooth pulp, all of which yielded promptly to treatment of the teeth, two cases of severe earache during the regulation of cuspid teeth due to tension of the regulating apparatus; many cases of pain in the ear during the filling of teeth, especially molars; one case of earache due to sensitive dentine; twelve cases due to deciduous teeth blocking advancing molars; eleven cases of tinnitus aurium, much if not entirely relieved by treatment of the teeth. As can be readily imagined, it is sometimes extremely difficult to draw the line between eye and ear diseases which are reflex in their nature, and those which are produced by actual cell migration or by inflammation spreading by direct continuity of tissue. Some conditions may be easily classified while others must needs live so near to the borderland that their nativity is shrouded in pathological mystery. It must not be forgotten that the periostal lining of the orbit is continuous with the alveolar border of the upper jaw, and almost so with that of the lower jaw as well. The mucous membrane of the mouth is directly continuous with that of the conjunctiva, Eustachian tube and middle ear. Occasionally the apices of the roots of some of the upper teeth extend directly into the antrum of Highmore, and from this situation disease frequently reaches the orbit through a thin partition of bone. The angular artery and certain veins run almost directly from one region to the other.

Personally, I am exceedingly skeptical of those cases of so-called reflex ocular or aural disease of oral origin, where intense inflammatory or purulent conditions are present in the eye or ear. I believe such diseases to be produced either by the migration of infectious microorganisms, through the nervous or vascular structures, or else by the extension of inflammation by periosteal or mucous tissue. Arnold Knapp reports a case in the *Archives of Ophthalmology* for May, 1902, of a patient, sixteen years of age, whose right canine and two upper incisor teeth had been filled at the line of the gums. Alveolar abscess followed in three days, the right side of the face became swollen and the right eye closed. Five days later the gum in front of the canine tooth opened and pus was discharged. The swelling diminished and the lids opened. The right eye was blind, the optic nerve white, the pupil was dilated and immovable. A firm flat swelling appeared in the orbit. A purulent fistula was established in the canine fossa. A probe could be passed upward and forward under the periosteum and exposed a roughened bone detached. The eye remained blind. F. W. Marlow, of Syracuse, N. Y., reports a case in the *Annals of Ophthalmology* for Jan., 1897, of a young woman, aged twenty-five years, who had an alveolar abscess of the first bicuspid of the left upper jaw which was opened and cured. It proceeded from an infected root canal. She developed pain in the ear and optic neuritis with great blurring of vision and subsequently entirely recovered. Dagilaiski, of Novgorod, reports a case in the *Klinisches Monatsblatt für Augenheilkunde* for July, 1899, of a boy seven years of age who suffered severely from alveolar abscess in the upper jaw accompanied with much swelling of the cheek and face, particularly about the eye. Pus was pressed from the diseased and carious tooth socket, which was that of the first upper left molar. The tooth was extracted and the antrum cleaned, during which process much pus escaped from the nose. A cure followed and Dagilaiski believes that the infection spread from the tooth along the periosteum of the upper jaw. Braunschweig has observed two cases of iritis with pus in the anterior chamber as a result of diseased teeth, and Swanzy has seen cases of orbital cellulitis following inflammatory conditions in and around the teeth. It is a matter of common observation that erupting misplaced and diseased wisdom teeth often cause tonsilitis, which is followed by inflammatory and painful ear affections of a purulent or non-purulent character, probably produced by the close connection between the tonsillar region and the Eustachian tube.

But it is unnecessary to further rehearse cases and illustrations; the facts are well known to us all, and I presume there is not a practitioner present who could not substantiate all I have said, with citations from his private practice. The purpose of this paper is not to furnish new thoughts, but to emphasize old ones, for a long personal experience in ophthalmology and otology, with an inherited tendency to exaggerate the importance of odontology, leads me to the belief that proper respect is not yielded to the undoubted connection between your specialty and mine. I would particularly urge eye and ear surgeons to carefully examine the mouth as a matter of routine, not forgetting to closely scrutinize crown work and plates, remembering that crowns are often injudiciously placed, that artificial teeth sometimes do not fit, and are even occasionally fitted over broken roots, which can hardly fail to produce irritation, reflex and otherwise, that may account for physical ailments unsuspected by an inexact diagnostician.

Following the advice of Baldwin, I would urge the establishment in all free dispensaries of a dental department, where proper oral therapeutics might be administered and where cases of the nature outlined in this article, could be promptly referred and correctly treated, and it is gratifying to note that at a recent meeting of the National Dental Association, held at Asheville, N. C., the following resolution was unanimously adopted:

Resolved: That it is the sense of the National Dental Association, that each medical college in the United States should include in its curriculum a lectureship on oral hygiene, prophylaxis, and dental pathology.

This resolution should be warmly endorsed by the medical profession and especially by those who are influential in framing the policies of medical instruction, for the active influence of oral physiology or pathology upon bodily health

and disease can no longer be brought into question.

It is also gratifying to know that the municipality of Strasburg has recently voted to build an $80,000 dental hospital for school children. Every pupil in the schools is to be submitted to a dental examination on entering and twice during school time until the age of thirteen. The municipality has come to the conclusion that a large proportion of the ills of young people are due to bad teeth and lack of proper dental attendance. Now, while it may not be possible to erect hospitals for this laudable purpose in all cities, it is both possible and feasible for boards of education and boards of health to appoint dentists who may quickly, yet efficiently, examine the teeth and mouths of all public school children once a year. Those suffering from oral abnormalities can receive warning cards to be given to their parents, notifying them of such conditions and advising them to have their children's mouths cared for either at some office or free dispensary. In this way the health of the coming generation would be much improved and a truly incalculable benefit conferred upon mankind. Years ago I devised a plan of this nature for the examination of school children's eyes and ears by school teachers, which has proven most successful and is now being used with gratifying results all over the United States, and even in many cities in Europe and Asia. If the plan is successful in searching for eye and ear defects, why may it not be equally efficient in detecting those of an oral character? I believe it may, and that it only needs the combined action of a united profession to place it in operation.

A HISTORICAL SKETCH OF SOME OF THE SO-CALLED CURES FOR CONSUMPTION: WITH A FEW NOTES ON LATER-DAY TREATMENT.

BY J. EDWARD STUBBERT, M.D.,
OF NEW YORK.

(Continued from Page 693.)

Maragliano* reports 130 patients treated with antitoxin serum, which is obtained in a manner similar to that of antitubercle serum. Of these "36 were clinically cured, including 17 with fever and destructive processes, with a cavity in three; 58 were improved, and the disease remained stationary in 31. In the remaining five the disease progressed. None of the advanced cases treated in the Institute were cured."†

In studying the results given by this form of treatment, the question arises whether there is any specific action in the specially prepared serum, or whether the ordinary serum obtained from any healthy animal, such as the horse or goat, would not produce an equally good effect. When we consider the pathology of the tuberculous deposit, remembering that, in the interior of the tubercles, the circulatory and lymph channels are excluded, it must be concluded that sera and tuberculins can have no direct effect upon the bacillus, but that the result must be obtained by an improved nutrition and increased resistance of the tissues surrounding the diseased area. Tuberculin and its modifications, as well as antitubercle serum, are still used by a small number of observers, and good results are from time to time reported. Among the modifications of the tuberculin of Koch and similar preparations, we need but mention: Kleb's tuberculocidin and antiphthisin, tuberculinum purifactum, water extrace of tubercle bacilli (Von Ruck), Maragliano serum, antiphthisic serum T. R., tuberculol, oxytuberculin, and U. S. antitubercle serum.

It is generally admitted that all these preparations are of use only in the early and incipient stages before any pyogenic bacteria have added the complication of septic poisoning, a time when it is also possible to check the disease with many other means at our disposal. A study of the reported results is interesting as indicating the class of cases in which tuberculin is of greatest service. Langenbeck and Wolff, Goetsch, Krause, Heron, Denison, Trudeau, and Von Ruck have reported their percentage of cures. They vary from 32 per cent of apparently cured cases, treated in various stages of the disease, to 83 per cent of those treated in the incipient stage only. Trudeau, with 24 cases, and Goetsch, with 175 cases, treated in the incipient stage only, report as apparently cured 83.0 per cent. and 71.0 per cent. respectively. In contrast, the percentages of those who did not limit the use of tuberculin to the incipient stage, average 38.6 per cent. Results in all the cases reported by the above writers show that of 416 patients treated, the average percentage of apparently cured cases is 51.73 per cent. Others who have used tuberculin, either as a therapeutical or diagnostic agent, are Koch, Douglas, Powell, Osler, Fraenkel, McCall Anderson, Eric France, C. T. Williams, Pottenger and Cornick. "Opinions differ greatly as to its value in treatment, less so as to its diagnostic use."*

A most dreaded condition in pulmonary tuberculosis is the occurrence of mixed infection causing a septic poisoning, as indicated by a high, spiked temperature curve, profuse sweating, rapid emaciation and depression of the patient, gastric disturbance and an excessive expectoration of sputum, muco-purulent or purulent in character, containing besides tubercle bacilli large numbers of streptococci, staphylococci, and sometimes diplococci. When the streptococcus predominates, a most satisfactory result is generally obtained from the use of antistreptococcic serum, 10 c.c. repeated every second or third day for two or three injections, if necessary. Often a single injection or 10 c.c. of the serum suffices. A drop in the temperature is immediately noted, sweats cease, there is less cough and expectoration, the nutrition improves, and the patient gradually

* Journal American Medical Association, Sept. 7, 1901.
† Progressive Medicine, Sept., 1902.

* Progressive Medicine, Sept., 1902.

loses the hectic flush. Examination of the sputum shows the streptococci to have disappeared entirely or greatly diminished in number. Throughout the course of treatment, the injection of antistreptococcic serum should be repeated as often as those germs reappear in the sputum. Their presence may be presaged by a return of temperature, sweating, and loss of appetite, leading to a bacteriological examination, which should be made at regular intervals in order that the reappearance of the pyogenic coccus may be met at once by full doses of the antistreptococcic serum.

Recognizing the staphylococcus as being frequently associated with the streptococcus in the mixed infections of tuberculosis, efforts have been made to obtain an efficient antistaphylococcic serum. Last year in France a combination product of both cocci was manufactured and a sample sent to this country. That sent to the writer was damaged in transit, so no accurate data were obtained. The reports from its use in France, however, are not as encouraging as we hoped, but the same investigators are still experimenting along this line.

Under the head of electricity we may consider not only the direct effects of the static and faradic forms, but also the active and powerful rays emanating from an electrical source. In static electricity, administered to a patient on an insulated platform, we possess a valuable adjuvant. In weakened and debilitated persons, as well as those of more robust temperament, its administration as a tonic should not be neglected. Giving the patient the positive electrode, the tonic effect is obtained. Cellular activity is increased, the gastric function is improved, and the absorption of both nourishment and drugs promoted. The latter effect is conspicuous in anemic persons, in whom the administration of iron together with the application of static electricity gives quicker and more decided results than when the electricity is not used. This fact was made clear to me by subjecting persons, who had previously been taking iron without the desired effect, to the static current and breeze, and noting a rapid improvement in the anemic condition and general health. In patients of neurotic tendencies the sedative effect of the negative pole is desired, which is soothing and productive of peaceful slumber.

The rays from an arc light, when concentrated upon the chest by means of powerful lenses, are supposed to possess a penetrative power intense enough to react on deep-seated tubercle bacilli, attenuating or even destroying them and, at the same time, restoring the tissue about the tuberculous focus to a more healthful condition. If it can be determined beyond a doubt that light in its various forms is so efficacious, we will have, theoretically, the ideal treatment for tuberculosis. Inhalations, injections, both intravenously and subcutaneously, and the administration of certain drugs are no doubt useful, but they do not penetrate tuberculous deposits because of their non-vascularity. Now, if a penetrating light is a germicide, might we not rationally expect a destruction of bacilli *in situ?* This accomplished, the disease should be limited to such an extent that general treatment, along the lines indicated at the present day, should permanently arrest the tuberculous condition. However, some observers believe that "X-ray stimulation does not kill tubercle bacilli, but stimulates them to excessive overgrowth and only affects them adversely by attenuation from overgrowth."*

As evidence of the germicidal action of the light rays, the writer recalls a case of empyema in which there was reaction of eight ribs resulting in a permanent fistula. The patient wore a silver tube fitted with a valve to prevent ingress of air after compression had arrested the activity of the tuberculous process in the lung. The discharge from the fistula contained tubercle bacilli and pus cells. He was exposed daily, for fifteen minutes, to the direct rays of an arc light with the result that, at the end of two months, the bacilli had disappeared from the discharge. This treatment was continued for six months, during which time no bacilli were found either in the sputum or the discharge, but two months thereafter microscopic examination revealed a few bacilli in the discharge.

Exposure of the bared chest to sunlight has been practised, but it has been demonstrated that the arc light, placed eight to ten inches from the chest wall, has slightly more power than the sunlight when it reaches the earth on the hottest summer day. The light is intensified by placing behind it a powerful reflector.

Currents of high frequency have been experimented with by Margazalli, Maragliano† and Chisholm Williams.‡ They agree that good results are obtained in that there is an improvement of all symptoms, and that bacilli are decreased in number after an initial large increase. The effects of high frequency current are: (1) Increase of pulse-rate during the actual applications of the currents, especially in consumptives; (2) increase of respirations which, after a time, become deeper in character; (3) increase of the power of digestion; (4) on the tubercle bacilli, attenuating their virulence by stimulating them to excessive overgrowth; (5) increased action of the kidneys. In his experiments on animals and men, D'Arsonval observed that the output of CO_2 was raised from 17 liters to 37 per hour, and the production of heat was increased from 79 calories to 127 per hour.

Recent investigations by G. Kaiser (*Wiener klin. Wochensch.*, 1902, No. 7) have caused him to ascribe to the action of the blue light a remarkable power of penetration, together with a depressing influence on bacilli.

The Finsen light, obtained from an arc light with the use of reflectors and lenses, has been exploited as a cure for malignant diseases, super-

* Forbes and Wolfenden, Arch Roentgen Rays, Aug., 1900.
† Journal American Medical Association, August, 1901.
‡ Philadelphia Medical Journal, November, 1901.

ficially situated, as well as lupus and pulmonary diseases. The original apparatus of Finsen has been modified in London. The results attained by its use do not seem to exceed or even equal those produced by the X-ray, nor does the Finsen light seem to be as powerful. It takes about twelve months to cure a case of lupus, while with the X-rays a similar result may be obtained in from six to twelve weeks. This may be due to the fact that the rays of shortest wave length, coming from the violet end of the spectrum, produce a chemic action. These rays are obtained more freely and in greater quantity from the X-ray tube than from an arc light, and, therefore, in the X-rays we possess a far more potent therapeutical light than the Finsen rays. Whatever the action of the X-rays may be on tubercle bacilli, it has given decided clinical results in some cases. In one case, treated by the writer, decided improvement was obtained. The patient was a male, forty years of age, with extensive areas of tuberculous consolidation and softening in the upper portion of both lungs. A large cavity was present on the left side and below, extending to the lower border of the upper lobe, was an area in which softening was rapidly progressing. On the right side there was a similar condition existent in both the upper and middle lobes, except that the cavity was smaller. A fatal prognosis had been given, and the patient told to go home and give up treatment. At his own request (he being a physician), the X-ray was applied four months, with the following results:

The evening temperature fell from 103° to 100° F., expectoration decreased about 60 per cent., the number of pus cocci were markedly decreased, and the sputum became more mucoid in character. No beneficial effects were observed upon the tubercle bacilli; on the contrary they seemed more prominent in the microscopic field, thus bearing out the statement heretofore made that the first effect of the X-ray upon tubercle bacilli is to promote overgrowth. The patient's weight increased one or two pounds and then remained stationary. The cavity on the left side became somewhat smaller and the area of softening below it was replaced by comparatively dense fibroid tissue. The small cavity on the right was partially obliterated, and a portion of the softened area disappeared entirely while that remaining was replaced by fibroid tissue. An interesting clinical feature in this case was that, proportionately with the increase of fibrosis, dyspnea increased. The patient was finally sent to Arizona to spend the winter months, and the partial arrestment of the disease has continued. This case is quoted only as a matter of interest, with the statement that one case does not make history.

The action of the X-rays on the skin is noted in three degrees: (1) Tanning, (2) blistering, and (3) burning. The first is unavoidable and harmless; the second occurs very frequently and, by some authorities, is considered necessary to attain the best results; and the third is sometimes unavoidable, but never dangerous. The latter, however, should be avoided whenever possible, both in the interest of the patient and the physician. The writer believes that the action of the X-rays encourages a breaking down and absorption of the tuberculous deposits at the same time that an increased activity of the healthy tissue surrounding the diseased area causes a protective fibrosis. Overstimulation with the X-ray may produce an undesirable extensive breaking down, which produces a septic condition, indicated by a rise in temperature, and, if persisted in, may hasten the death of the patient. Therefore, it must be remembered that, even without burning, it is possible to do the patient great harm. The temperature should be watched in all cases under X-ray treatment, as well as the condition of the skin. The absorption of ptomains from small areas of diseased tissue, when broken down by the X-rays, is of no importance, but when the areas thus acted upon are at all extensive, the patient may readily be overwhelmed by sepsis and too rapid absorption.

Upper Air Passages.—It will be well to note here the importance of a thorough examination of the upper air passages in all cases of pulmonary tuberculosis. As an aid to treatment, it is absolutely necessary to remove all obstructions to proper respiratory movement from the nasal passages, naso-pharynx, pharynx and larynx. Turbinal hypertrophies, septal spurs, polypi, adenoids, enlarged faucial and lingual tonsils should be removed. Chronic congestion or infiltration of the arytenoids, if discovered early, may be easily cured by prompt local treatment. Statistics show that not less than 25 per cent. of persons suffering from pulmonary tuberculosis have more or less involvement of the larynx and nasopharynx. Of this number 38 per cent. present congestion or infiltration of the arytenoid cartilages, interarytenoid space, ventricular bands or vocal cords; 32 per cent. show ulceration in one or more of these places, most frequently on the cords or interarytenoid space; 30 per cent. have some abnormal conditions of the nasopharynx. I wish to emphasize this point because frequently in the consulting room, it has come under my personal notice that physicians of high standing have permitted such conditions to escape their observation.

Intravenous Injections.—In the hope of more surely reaching the affected areas in the lung, the intravenous injection of antiseptics has been proposed. Subcutaneous injections have also been made. The drugs thus used are formic aldehyde, hetol, cinnamate of soda, and cacodylate of soda. Landener's treatment of intravenous injections of sodium cinnamate has been employed by other experimenters, with a wide diversity of opinion as to the results. Albert Mann* believes a leucocytosis is set up, which, together with an active aseptic inflammation about the diseased area, replacing an inactive septic one, results in

* Philadelphia Medical Journal, March, 1902.

rapid cicatrization. Henssel* reports on 60 cases thus treated. He believes it to promote cicatrization and to be harmless to the patient. Gidionsen† uses hetol intravenously, but has found it of no greater advantage than the open air treatment, in fact, he considered it harmful as his cases lost weight and pyrexia was not improved. Max Wolff‡ reports negative results both in animals and in man from the use of hetol and igazol. Franck§ believes in the hetol treatment for early cases only. Onelli‖ ascribes the rapid improvement, shown within a month by a patient in an advanced stage of the disease, to intravenous injections of cacodylate of soda. Among others who have made use of injections of hetol are Krokiewicz¶ and Amrein.** The former thought they produced too marked a congestion and leucocytosis about the diseased area, and he, therefore, substituted the subcutaneous injection in smaller and more frequently repeated doses. He observed better results by the latter method, and when both methods were impracticable, he gave the drug in pill form. Amrein obtained no positive results.

The writer has used, intravenously, hetol, cacodylate of soda, and formaldehyde in 1 : 5,000 solution in a number of cases. The immediate results are generally unfortunate, a very serious chill and reaction occurring. The mental factor counts for so much in such cases that it is difficult to arrive at any definite conclusion as to the truthfulness of patients' statements, in which they professed to have experienced great increase of appetite and general well-being. The final results in all these cases showed nothing more striking than those to be expected from the infusion of the amount of normal salt solution used as the vehicle. This method of treatment, however, is still in an unsettled and experimental stage, and more complete reports with fuller details will be awaited with interest.

On the theory that phthisis may be due to disordered and diseased pulmonary innervation, May makes subcutaneous injections of silver nitrate in the neck, over the course of the vagus. The side selected for the injection is usually the one corresponding to the diseased lung, or both sides may be injected at the same time if both lungs are affected. The injection is made over or slightly behind the pulsating carotid artery, in the region of the neck, in a line between or near the angle of the jaw and the clavicle and nearer the latter than the former point. Four to seven minims of a 2½ per cent. solution of pure silver nitrate are injected, preceded by five minims of a 2½ per cent. solution of cocaine through the needle, which is not withdrawn until after the silver solution has been introduced. Larger doses have been used when indicated. The injection is followed by swelling, redness and pain. Cough and expectoration decrease, vomiting is lessened, sleep promoted, appetite and general strength increased, physical signs improve, fever diminishes, night-sweats are checked, and there is generally a gain in weight. Of forty cases reported, seven in the incipient stage were cured. Of 18 advanced cases, 5 died; two remain invalids; and 11 improved sufficiently to resume work. Of 15 far-advanced cases, 11 are dead, two are invalids and two are able to work. The writer made use of silver injections, but found that the patients strongly objected on account of the pain and discomfort.

Camphor, in one or two doses of two grains daily, has been given, and improvement in the physical signs as well as the subjective symptoms was noted.

The use of antiseptics in the form of inhalations has been considered another direct method of reaching the tuberculous process in the lung. Here, again, opinion differs as to their efficacy, some contending that, to possess germicidal power, the vapor or gas inhaled must of necessity be too irritating to the mucous membranes. On the other hand, we find favorable reports following their use, especially is this true of formic aldehyde. There are two methods of giving inhalations of formic aldehyde: (1) By use of an oranasal inhaler, which may be worn for many hours during the day and night; into this is dropped 30 minims of a 4 to 10 per cent. mixture of formalin, chloroform and rectified spirit, and renewed every two or three hours. (2) By generating the gas in a closed or partially closed room by means of a vaporizer, while the patient reclines and breathes the atmosphere of the apartment for two or three hours daily. Some advocates claim that it not only disinfects the room and its contents, but that it diminishes the cough and expectoration, reduces fever, and causes the tubercle bacilli to diminish in number, and sometimes to disappear. Of 22 cases treated with formaldehyde inhalations, at the same time enjoying the open air treatment, but no medication beyond a corrective for indigestion, reported by Muthu,* eight were completely cured; nine almost cured; one was slightly benefited, and the remaining four were indifferent.

What is known as "Alabone's Cure" consists of breathing the vapor produced by passing compressed air through tubes and flasks in such manner as to comminute the fluid to be used. In this manner formic aldehyde, menthol, eucalyptol, etc., are supposed to reach the air passages when inhaled. Creosote, ichthyol, and the oils of turpentine and tar as well as other volatile oils are used by inhalation. An effective germicidal action is ascribed to izal which has been given by mouth and as an intratracheal injection. The dose by mouth is two to ten minims given in capsule with five minims of cod-liver oil, once or twice daily. Campbell has made considerable use of it as an intratracheal

* Correspondenzblatt für Schweizer Aerzte, January 1, 1902.
† Philadelphia Medical Journal, August, 1901.
‡ Deutsche medicinische Wochenschrift, July 11, 1901.
§ Therapeutische Monatshefte, December, 1901.
‖ Rif. Med., July 19, 1901.
¶ Klin. therapeutische Wochenschrift, Nos. 2 and 3, 1902.
** Lancet, July 12, 1901.

* Medical Annual, 1902.

injection. As much as three ounces of fluid can be injected at one sitting—one part izal to ten of glycerin. While he reports no cases, he speaks of cures that have been effected.

In the treatment of pulmonary hemorrhage, there has been a decided change from the old style of general and local depletion. The ancient idea was to limit the inflammatory condition by bleeding just as they did in the more acute diseases. This idea gradually gave way to a conserving of strength and an endeavor to limit the amount of blood lost as far as possible. In this day we have not stopped at this, but have hoped by certain procedures to more efficiently control hemorrhage from the lungs. When Murphy announced the possibility of curing tuberculosis by injecting nitrogen gas into the pleural sac to immobilize and compress the lung, it occurred to the writer that it might also prove an ideal method to control hemorrhage. It was soon discovered, however, why it could not be so regarded. To be efficient there must be no pleuritic adhesions or bands, one must be able to definitely locate the point of hemorrhage, which is frequently impossible, and the lung must be capable of compression. The percentage of cases in which this treatment is available is necessarily so small as to render its use practically impossible.

Other means of compression are afforded by applying adhesive plaster bands or even a splint of plaster of Paris or some other material. Pleuritic effusions are at times allowed to remain in the chest in order to continue the pressure they exert on the lung.

Morphine is considered the most valuable drug in arresting hemoptysis. It slows the pulse, decreases blood pressure, relieves the desire to cough, and secures rest for the patient. It is best given in doses of $\frac{1}{8}$ to $\frac{1}{4}$ of a grain, combining the initial dose with $^1/_{150}$ to $^1/_{100}$ of a grain of atropine. The exact action of ergot was not formerly understood, but as it was known to control uterine hemorrhage it was thought capable of controlling hemoptysis. In this it seems we were mistaken. It is rarely as efficient as morphine, and is only indicated when the hemorrhage is supposed to be venous or from a small arteriole.

Other drugs are atropine, nitroglycerin, suprarenal extract or adrenalin, calcium chloride (grains 20 to 30 every four hours), and turpenol, drops three every two hours in milk. When the loss of blood is large, hypodermoclysis or intravenous infusion with normal salt solution, or transfusion, may be practised. It has been claimed by some writers that the atropine in the combination pills of atropine and morphine is responsible for the beneficial effects on hemorrhage, and, with this statement in mind, the writer experimented upon a number of cases with injections of atropine alone but failed to obtain any good results. It may be of interest to state here that the X-rays cause contraction of the arterioles. I am not prepared to claim any beneficial effect from them in hemoptysis, but I do know that in one case of uterine hemorrhage, in which bleeding occurred almost daily for three months following an operation, the application of X-rays effectually checked the hemorrhage, and the menstrual function became normal after seven exposures to the rays. An effect also noted in cancerous and other sanguineous discharges is that, under X-ray treatment, they decrease materially in quantity.

Experiments looking to the control of pulmonary hemorrhage have been made with subcutaneous injections of gelatin. Of those who have thus far made injections, the majority regard them as harmless, though there is no evidence that they are really useful. It is important that the gelatin used should be perfectly aseptic. The possible dangers of such injections are embolisms, necrosis and tetanus.

S. G. Bonney* believes that hemoptysis in consumption is less likely to occur at high altitude, but it may be more severe and cause greater shock than at sea level. In support of this statement, the writer recollects having seen patients at a moderately high altitude, who had had a number of hemorrhages at short intervals while living at sea level, in whom the hemorrhages disappeared entirely after reaching an altitude above 2,000 feet.

In hydrotherapy we possess an agent of considerable usefulness, both as a prophylactic and in the early stages of the disease. This does not mean that it is to be neglected in the more advanced stages. The primary idea is to produce a reaction of the skin and to promote cutaneous circulation. The degrees of application vary from bed baths and flagellations in those who are weak and confined to bed, to the needle spray, shower bath and spinal douches administered under a certain degree of pressure. It is important that the skin should be in such condition as to secure proper reaction. The surface should be warm or even moist. In the healthy, exercise immediately preceding the bath will be sufficient. In others a stay in the sweat-box, in which the temperature can be raised to any degree, is necessary, while for those confined to bed, wrapping tightly in blankets from head to feet will answer the purpose. The shock caused by dashing cold water on the warm body, followed by reddening of the skin, stimulates the patient, makes him less susceptible to draughts, induces more natural sleep, increases appetite, and produces a general feeling of well-being.

The value of urea in tuberculosis is, as yet, undetermined. Harper,* believing that gout and its allied diseases are antagonistic to the tuberculous process, and that those afflicted with the former diseases possess a natural antitoxin against the bacillus, supplies an excess of urea to those with tuberculous lesions by encouraging them to partake of certain foods rich in urea, namely, kidney, liver, and calves' or sheep's

* Medical News, October 1, 1901.

brains. In addition, he gives twenty grains of pure urea, dissolved in three ounces of water. Buck* reports good results in cases treated along this line.

The success of zomotherapy, or the treatment of tuberculosis by the ingestion of raw meat, probably depends upon the correctness of the above theory. It is stated that a somato-antitoxin exists in muscle plasma or serum, and is resistent to the tubercle bacillus. However, C. Frankel and G. Sobernheim† tested it in animals, and discarded it as unworthy of further experimentation.

Postural treatment has been proposed by Schenk‡ to promote hyperemia of the lungs. He elevates the foot of the bed twelve inches, and applies warmth to the chest by means of water coils, at the same time sponging the hands, feet, and abdomen with cold water. His theory is "That tendency to phthisis depends . . . upon a relative cardiac insufficiency, leading to a defective circulation through the lungs, and that those who suffer from pulmonary hyperemia, as a result of valvular disease, are comparatively immune."

Operative treatment, such as the aspiration of cavities followed by the injection of drugs, opening and draining of cavities, and the resection of diseased areas of the lung, have been attempted with no encouraging results. They may still be considered on trial. One great drawback to operative procedures is that those cases generally selected as suitable could, undoubtedly, receive as much benefit from less dangerous measures. Inunctions have not been neglected, the favorite drug used in this manner being iodine in one of its unstable forms.

In pyrexia, with so many other remedies at hand, it seems hardly advisable to administer antipyretics for the purpose of simply lowering the temperature. They may prove depressing while almost equally good results may be obtained from cold sponging and rest.

Night-sweats usually disappear on general improvement of the physical condition of the patient. If special measures are necessary, atropine will be found most useful. The mineral acids, tellurate of sodium ($^1/_{12}$ to $^1/_2$ grain daily) agaricin, may also be used, while bathing with cool water, alcohol or a weak solution of formalin may be of service. When the sweats are due to a septic condition in the lung, antiseptic inhalations are advisable, and serum for destruction of germs as well as intratracheal injections in cavity cases.

Cough can be sufficiently controlled by mental suggestion or by codeine, dionin, or heroin. In advanced cases, however, it may be necessary to resort to posture and massage of the chest.

Summary.—With our present knowledge and clinical experience in the treatment of this disease, diet, hygiene, and fresh air are universally accepted as the foundation of all scientific treatment, although it is equally acknowledged that, by themselves alone, they are not sufficient, but must be supplemented by symptomatic treatment in the way of antisepsis, tonics, and surgical interference when necessary. The probability is that within the next three years, we will see notable advances in immunization and the stimulating effect of light. In the meantime, the physician who would prescribe climate alone is equally culpable with him who would ignore climate, diet and hygiene in favor of medicinal or other treatment. The man who would justly earn the gratitude of his patients will be he who will prescribe a judicious, scientific combination of the two basic lines of treatment.

25 East Forty-fifth Street.

* British Congress on Tuberculosis.
† Berliner klinische Wochenschrift, July 5, 1901.
‡ British Medical Journal, Sept. 28, 1901.

HYSTERIA AND ORGANIC DISEASE.

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VALUABLE addition to our knowledge of hysteria may be obtained by following a few typical cases over a long period of years. Not only in its etiology but clinical history hysteria presents a mixture of both physical and mental symptoms. Earlier writers sought for and not infrequently found causes and symptoms that were distinctly organic. More recently chemical and cytological changes in the tissues have been looked for. The trend of the work of the French school, especially of such writers as Janet, Sollier and others, has been in the direction almost exclusively of a purely psychological interpretation of hysteria. The studies of suggestion and fixed ideas are the two lines of research that explain the problems of hysteria, and these we owe chiefly to the French.

Notwithstanding the enormous variety of the symptoms of hysteria, one common trait appears in all cases of this disease, perhaps the only one, and that is the possibility of its being reproduced by suggestion with rigorous exactness in proper subjects and of being dispelled by suggestion. "Man," as Boris Sidis states, is a "suggestible animal" and no matter how normal he is, if his attention is fixed, and distracted by some monotonous impressions, and if his voluntary movements and field of consciousness are limited, and his ordinary flow of thoughts inhibited for the time being he yields to suggestion. In the normal state a suggestion is more effective, the more indirect it is, and in proportion as it becomes direct it loses its efficacy. Or as Sidis states it, "normal suggestibility varies directly as indirect suggestion and inversely as direct suggestion." The Nancy school defines hypnosis as heightened suggestibility. Abnormal suggestibility varies directly as direct suggestion and inversely as indirect suggestion.

In normal men, the superior and inferior centers of the mind work in harmony, meaning by the upper, the will or choice centres or in other words the controlling and inhibitory centers. Physiologically, hypnosis is an inhibition of the inhibitory centers. It is a disaggregation of the superior from the inferior centers, necessarily followed, as in the removal of inhibition in general, by an increase of the ideomotor and ideosensory reflex excitability. Psychologically hypnosis is the split-off, disaggregated, organic reflex consciousness pure and simple.

Charpentier uses the word suggestion implying something harmful, and the word persuasion for suggestion that is in harmony with reality or good sense. For example, suggestion that a patient's arm will be or is paralyzed, persuasion that it will be cured. He defines hysteria as a psychical state rendering the subject who suffers from it capable of auto-suggestion, and the hypnotic state rendering the subject who undergoes it, susceptible of receiving direct suggestion from another.

Thus the purely psychological interpretation of hysteria explains its etiology in terms of suggestion and its primary symptomatology in the line of fixed ideas. Since the thoughts of a hysterical subject are rarely in a state of equilibrium, but unevenly balanced and subject to varying influences, one line of thought can readily develop in a manner so exaggerated and intense as to persist indefinitely to the great detriment of the mental and bodily health of the patient. This line of thought may become the condition of fixed idea or imperative concept which even to an uneducated observer is well beyond the borderline of sanity. In its extreme, hysterical psychoses resembling paranoia or other definite types of insanity may develop. Apart from these definite psychoses many less advanced cases of motor, sensory or visceral symptoms can easily be explained on the same psychological hypothesis. Bernheim calls attention to the fact that the serious symptoms or "grand crises of hysteria, are merely an exaggeration of the ordinary psychical and physiological phenomena seen under varying circumstances in normal human beings. He defines a hysteric as a subject who has a hysteria breeding or hysterogenous constitution, "appareil hysterogene" well developed and easy to be worked upon.

The clinical syndrome caused by exciting or depressing the nervous and psychical centers, developed by a shock or mental strain of any sort, instead of being temporary as in normal subjects and quickly disappearing, appears more quickly and readily degenerates into a prolonged attack with such general symptoms as convulsion, delirium, syncope, changes in sensation or local symptoms varied according to the individual condition of one or another organ. Hysteria, he states does not exist by itself. The hysterogenous state exists and various so-called hysterical symptoms may arise. It is characterized by a series of reactions, both physical and mental, and in a hysterogenous constitution, under certain causative influences, such as sudden moral or mental strain, or a more gradual impression, by the condition of nervous anxiety. All kinds of depressing impressions, whether they be such as are created by an incident of life, or suggested by an obsession of a fixed idea, are effective when focused on a hysteria-breeding constitution. Such general and local depression of a nervous nature, whether sudden or gradual, awakens latent hysteria in different ways. Vague sensations of discomfort or distress located in certain organs, or even an appreciation of their existence, and physiological activities, which normal people have no special knowledge of, a feeling of oppression, neuralgia, cramps or any other disagreeable sensation, form a substratum upon which basis, in a hysterogenous subject, hysterical symptoms may be built up.

Nervous anxiety may not always be present. Special impressionability of the potential hysteric ought not to be confounded with neurasthenia. The mind may be of a type prone to exaggeration and romance, but may seem morally and mentally normal. All the ideas are suggestible or autosuggestible.

In the symptoms resulting, what Richer calls a diathesis of hysterical contracture is apt to be present. While the patient presents no objective signs and preserves freedom of movement, the manifestations of his trouble may be brought on by the manipulation of his physician or some chance occurrence. This condition of the neuromuscular system partakes of paralysis in that it usually coincides with a weakness of motility, and of contracture in that the slightest excitement will bring it on, or cause it to disappear. It has been called latent contracture.

A second common condition in hysteria is seen in the vasomotor phenomena such as the flushes, morbid blushing, sensation of heat or cold on the surface of the body. In a case of typical traumatic hysteria seen by the writer a short time ago, showing well marked hemi-anesthesia and contracted visual field, over an area where a contusion had been sustained two years before, but where no scar or permanent injury was visible, an area of redness of the size of a half dollar would appear whenever she was subject to a strong emotion, and was especially noticeable when she sat in the witness stand. Here autosuggestion in producing definite paralysis of the vasoconstrictor nerves over a limited area, was absolutely demonstrated. In these cases salivation, local hyperidrosis, pallor, or hot or cold extremities are common. If the same vasomotor phenomena take place in the general sympathetic system, especially in the splanchnic or cardiac plexus, serious trouble from some of the internal organs may occur. Flatulence, palpitation or irregularity of heart are common examples. Fränkel reports several cases of death from such cases of hysteria with special interference with these

important parts of the sympathetic system, with no organic lesion of any sort found at the autopsy.

Edema of the lower extremities, from this cause, and if the spasm is prolonged, even local gangrene, as in Raynaud's disease, may occur. Many dermatoses of hysterical subjects, most frequently of the urticarial type show this reaction. Herpes especially herpes preputialis, occurring as it does in thoroughly neurotic subjects, and various familiar or rare types of skin diseases mechanically produced by vasomotor fluctuations can be classed with these conditions.

Given a neurotic subject, neurotic from bad heredity, or mal development passing through any of the critical periods of life, such as puberty, adolescence, pregnancy, the menopause, or old age, with the resisting power none too strong, and hysteria is almost inevitable if the subject has a hysteria breeding constitution.

Take a common example of the first or second period. A boy or girl falls into a state characterized by self-centered mentality, irritability, inability to work; anorexia, gastralgia, vomiting, or the symptoms described in detail in the patent medicine advertisement occur. Typical symptoms of hysteria, contractures, anesthesia, crisis or paralysis of one sort or another may follow. The condition is a neurosis of development. It is based on autosuggestion or unconscious imitation as a rule. It may be associated with toxemia of some sort. Sometimes the patient is able to suppress every symptom of a nervous nature except the anorexia, which may persist as an obsession which cannot be resisted. The moral inertia of such cases may persist until the cyclic evolution of the youth is completed.

Whenever, in such a case as this or in any other nervous or mental disease, anorexia becomes one of the definite symptoms, grave changes of the physical condition will result, such as emaciation, weakness or any objective and subjective symptoms ordinarily caused by starvation, of which anemia is the most frequent and serious condition.

Neuroses and psychoses of old people whether during the menopause, or the senile period are frequent. At this time hysteria is associated with such changes in the tissues as arteriosclerosis, aortic insufficiency, angina pectoris, asthma, and acid dyspepsia. Frequently the patient is not naturally hysterical or hysterogenous. Progressive changes of the patient in the last years of life, render the hysteria breeding constitution more impressionable. Hysteria is not created by the arteriosclerosis, but a hysterical diathesis is revealed by it and the capacity for resistance is decreased by it.

In women who have hysterical tendencies, the menstrual period with its physiological depression, is a time specially liable to develop definite hysteria, just as those prone to epilepsy, or even uricacidemia present their most marked symptoms at this time. Physiological congestion of the ovaries and minor displacements of one or another of the pelvic organs, have their effect in severe pain and other nervous symptoms which may be definitely hysterical. The whole train of what the patients term "female complaints" are a vicious circle in which hysteria is an omnipresent factor. It is difficult or impossible to state in a given case which is the primary and which the secondary factor.

A normal menstruation is not sufficient to reduce the number of red corpuscles in the blood, for, like all other slight hemorrhages, it sometimes increases the number of red cells and the hemoglobin. If other causes of anemia are added, a slightly disordered menstruation rapidly reduces the number of red cells, and hemoglobin, and definite anemia results.

General observation convinces every one that the two types of women from whom we expect hysterical symptoms, are the anemic and the poorly nourished women, and the fat women with hydremia; the latter look as if their color was good, but the mucous membranes or blood count show anemia. Ewing states that functional nervous diseases, such as hysteria, neurasthenia or hypochondriasis do not give rise to anemia, though associated conditions may lead to impoverishment of the blood.

In cases of hysteria associated with gynecological disorders, the gynecological lesions are presumably primary. Fibrocystic ovaries are common in later life without causing pain or nervous symptoms, and yet the same pathological condition may be associated with or cause intense neuralgic pain. And, as nearly all cases of hysteria show, the commonest of the so-called stigmata of hysteria is the "ovarie" or sensitive ovary, a similar painful area being frequently seen in male hysterics.

Practically all diseases can become hysterogenous especially those of the nervous system. Chorea and epilepsy frequently breed hysteria, and the symptoms of chorea and epilepsy can usually be proved to precede the hysteria. If they coexist, each disease preserves its distinct symptoms.

Tabes, hemiplegia following cerebral lesion, definite muscular dystrophies, all may be hysterogenous and have distinctly hysterical symptoms engrafted on them. Alcoholism and other toxic conditions, in hysterogenous subjects, can present a mixture of symptoms, which are not easily separated. It is usually as inaccurate to speak of alcoholic hysteria as hystero-epilepsy.

Admitting that various diseases may be hysterogenous, is the converse true? In typical cases of hysteria, in the course of time definite organic symptoms must appear. All hysterical cases must eventually die of something. What is the relation of hysteria with cardiac, urinary or intestinal symptoms which are obviously hysterical, to such genuine and ultimately fatal lesions as organic disease of the heart, the kidneys, or other organs? Naturally it is in the severer type of hysterical attacks that definite impression on the organs should be expected.

The symptoms of hysteria which appear in the earlier part of the history of a case are as a rule of moderate intensity, do not alter consciousness extensively, and even if they last a long time, eventually disappear. The hysterical seizures or attacks are just the reverse. They are acute, they make decided alterations of consciousness, they are momentary or last but a few hours. These attacks are fairly well known on account of their startling character and the necessity of distinguishing them from other convulsions of a far more serious nature. Not only the physical symptoms become more definite, but there will develop some modification of the respiration, circulation, and all organs under the control of the sympathetic nervous system. Janet makes seven types of hysterical attacks: (1) emotional seizures; (2) attacks of tics or clownism; (3) attacks of fixed ideas or ecstasies; (4) complete attacks, hysteria major (Charcot); (5) automatism in the attack and in the fixed ideas; (6) somnambulism; (7) delirium.

The first physical change resulting from convulsive disease may be looked for in metabolism and especially in the urinary secretion. Hysteria is always associated with such modification. Polyuria of a low specific gravity is one of the most constant physical symptoms of hysteria. Long-continued reduction of the total amount of urea is described by Janet and others, and the reduction may last for months (two grams daily in a total of 100 grams of urine). Other cases continued to pass less urea than has been supposed possible for any length of time without fatal results. Charcot reported anuria in a hysterical case lasting eleven days without any symptoms of uremia. Lowenfeld explains this as due in some cases to diminution of metabolism and the slight production of the material that causes uremia. In other cases, or perhaps usually, the most reasonable explanation is the cramp of the vessels of the kidney, like the vasomotor disturbances previously alluded to, which are so common in hysteria, and in this case easily modify the secretory function of the kidney to a greater or less extent. The typical urine of hysteria is large in amount, low in specific gravity; the solid ingredients, such as urates, phosphates, chlorides are diminished to about one third of the normal; and the ratio of earthy phosphates to alkaline phosphates instead of being 1:3 are 1:1. In a recent experimental study by Castaigne and Rathery in *La Semaine Médicale* it is stated that lesions were found in the kidney wherever polyuria was known to have existed during life, and lesions were found in rabbits every time polyuria was induced for a certain length of time.

Albuminuria may be found after violent convulsive attacks. This is common after violent epileptic attacks. Galanti, in repeated examinations of the urine of 16 epileptics, found, after the epileptic seizures, albumin in quantities varying from 0.05 to 2 per cent. The duration of the albuminuria was from four to six hours. If albumin was present in the urine of these patients, it was much increased after the attacks. He explained the albuminuria by (1) renal stasis secondary to the initial stage of the fit and the dyspnea; (2) by cerebral excitation at the cortex and bulb; (3) by the toxic influence upon the renal epithelium; (4) by change in metabolism and intestinal toxemia; (5) by the intense muscular work. Nearly all these factors are present in a severe hysterical attack. That albuminuria may be associated with hysteria, whether as an etiological factor or, as is more probably the case, as a result is illustrated by the following case under observation by the writers of this paper and many physicians in Brooklyn:

The patient was a trained nurse, aged twenty-five years, born in Scotland. Her father is neurotic, and somewhat of an invalid from chronic bronchitis. Her mother was at one time insane and died of phthisis. Her previous health was good. She was addicted to the excessive use of coffee. She suffered from great mental depression after her mother's death, shutting herself up in her room for several days, and also from the effects of a severe contusion of the knee, for which she wore a knee-cap for a long time, because she believed it had been fractured. When she entered the training school, her fellow nurses say that she appeared somewhat slow mentally, studious, absentminded, and forgetful. They had not considered her as especially nervous in temperament. Although she studied hard, she seldom learned her lessons perfectly and this worried her. She was well liked on account of her sweet, obliging disposition and manners, and her desire to do her work well. She had an unfortunate love affair while in the training school, which affected her severely. At this time some slight breach of the rules of the hospital, which caused her to be reprimanded, had the effect of making her feel that she was an ill-used person, and made her crave sympathy and consolation from others.

December, 1899, she came to the Brooklyn Hospital from outside nursing, complaining of symptoms of influenza. After working a few days more she returned complaining of pain in her eyes. She said she had been nearly run over by a trolley car, because she could not see it. But immediately after this had happened, she was seen to look up an oculist's address in the telephone book. She was under his treatment for some weeks for internal strabismus of the right eye. About this time she had an attack of nausea and faintness in the doctor's office, associated with feeble heart action and alarming general symptoms. During the following days, though working, vertigo and unsteadiness persisted. Four days later the patient was suddenly seized with convulsions which were diagnosed by two physicians as uremic, though their examination of urine had been insufficient. She was sent to the Brooklyn Hospital in an ambulance, chloroform being administered en route. She reached the hospital unconscious. Her respiration was deep and stertorous; her pulse 88, soft and moderately

forcible. Her temperature was 100° F. She was put in a hot pack for a while, reflex movements occurring while in it, but little diaphoresis. Examination of urine showed no albumin; a specific gravity of 1.036, abundant urates and phosphates. As it reduced Fehling's solution a conjectural diagnosis of diabetes was made, but before the result of this examination was reported, the patient reacted to supra-orbital pressure and cried out when allowed to inhale aromatic spirits of ammonia. No glycosuria was present, the examination having been made hastily by gaslight.

She remained in the hospital for six weeks; her mind being clouded most of the time. At the time of her discharge her bodily health was good but the ocular symptoms returned. There was internal strabismus of the left eye. The pupils reacted to light and distance. The patient complained chiefly of diplopia. Some observers diagnosed her case as tuberculous meningitis. The mental symptoms improved, but loss of memory and inability to recognize her friends or name them correctly persisted. She improved but complained constantly "that people did not seem the same." A nurse in the hospital gained a remarkable control over her, so that the patient was said "to have been hypnotized by her." No new physical symptoms were recorded and examination of her urine was always negative.

After her discharge from the hospital, the patient remained in good health excepting her memory. She went abroad and joined her family, but suffered considerable fatigue and nervous strain, however, from having to nurse her father through pneumonia. A year later she came to a New Jersey town to nurse a confinement case. Unexpected delay and responsibility in connection with this case worried her very much.

October 7, 1900, she was found on the kitchen floor in clonic convulsions. The movement of the limbs were rhythmical, making rather small uniform excursions. There was some opisthotonos, the head rotating slightly. The eyes were wide open, turned to the left, the pupils dilated and fixed, but there was no strabismus. The facies was dark and cyanotic. The fists were clenched and the thumbs turned into the palms. The pulse was imperceptible. The movements became weaker until the patient lay quiet but seemingly comatose. A prick of a needle, administering a hypodermic of apomorphine brought on another convusion lasting fifteen minutes. Chloroform had to be administered. She was taken to the Mountainside Hospital in an ambulance, showing on examination that her tongue was bitten, she had suffered contusions and ecchymoses from the convulsions and had micturated involuntarily. She had in all three or four distinct convulsions, the first one having been ushered in by a pain in the bowels and headache and general malaise.

The urine was examined by the pathologist of the hospital, and was found to contain a considerable quantity of albumin (1 per cent. by weight), and the specific gravity was 1.015. Thirty-two ounces had been passed in twenty-four hours exclusive of what had been lost in the stools. She had a few hyaline and granular casts.

The record of the first night was marked only by some involuntary micturition, occasional vomiting, and a mental condition dazed or mildly delirious, at times uncontrollable. She was sent to the Brooklyn Hospital soon after, going quietly with her friends and recognizing the people in the hospital but not realizing where she was. The records of the hospital give the following account of her condition on admission.

General appearance and attitude, well nourished, nervous and restless. Cheerful manner, mannerisms or peculiarities of dress or posture. Reaction to surroundings interested, to questions fairly coherent, attention fair, content of thought not absolutely fixed but centered upon her father's voice who kept calling to her from the next room. Consciousness, orientation for time absolutely lost; she said she had been in the hospital for three years. Orientation for persons and places also defective. Confused memory for both past and present events. Interest and judgment not apparently affected. Fancies she sees persons not present; hears voices that are not existent. The hallucinations of sight and hearing are fairly constant. No depressive, expansive or fixed delusions. Emotional condition, not especially disturbed. Physical condition: No stigmata recognized. Reflexes normal.

For a fortnight her urine showed in five examinations a faint trace of albumin with granular and hyaline casts. The examination showed no changes in sensation or reflexes excepting the loss of the palate reflex. Two weeks later the patient left the hospital "improved," with a diagnosis of "hystero-epilepsy." The diagnosis in the same institution some years before having been hysteria.

One year later the patient was seen to be in apparently good health and had grown somewhat stouter. She had been able to work and had not been sick excepting for a period of three days, when she had been living in a nurses' boarding house. Her mind was a blank for these three days and she does not remember what happened. A physician consulted by her diagnosed some gynecological condition and treated her for it, advising an operation. She still has headaches and these are at times preceded by pain over the ovarian region, and characterized by feeling of great pressure across the eyes. Repeated examination of the urine shows no albumin or casts. She is at times constipated, has some leucorrhea. There is no gynecological lesion at present existing. She still dreads another "turn," which has not appeared for a year. The family surroundings and improved prospects have doubtless helped to bring this improvement about.

This case, related in detail, presents marked difficulties of diagnosis as between organic disease, such as uremia and functional nervous disease, and again, still greater difficulty if one would discriminate between hysteria and epilepsy.

The symptoms of her convulsive attack carefully summed up in parallel columns in the style of text-book diagnostic tables, which compare epilepsy and hysteria give out of 18 points, 5 unmistakably referable to hysteria and 11 to epilepsy. The fact remains that the clinical history followed over a period of years clearly proves that it is the record of one suffering from hysteria in ever-varying phases. There comes a time when careful and repeated examination of the urine shows for a brief period the casts and albumin, usually associated with definite organic disease of the kidney.

The supposition that there was nephritis as an underlying cause of the whole train of symptoms, or any important part of the symptoms, cannot be maintained, however.

Case II.—M. S., an American Hebrew, of the dark and handsome features type; giving a definite neurotic family history. He had recently passed through serious business trouble and had lost most of his money. When first seen by the writer he announced that he was about to have "one of his colics" and requested that if he should, ether or chloroform be administered to him, as morphine always crazed him. He said he had had a stone crushed in his bladder. He had had numerous "nephritic colics" and had traveled all over Europe to various health resorts. He had passed no stone recently. Then ensued a series of the most violent attacks imaginable attended with intense pain in the region of the kidney, running down to the penis. He was extremely nervous and after injections of morphine, he became so wildly delirious and unmanageable that he tried or pretended to try to throw his physician out of the window. Local examination showed a sensitive urethra, an enlarged and tender prostate and tenderness in the region of the left kidney. The urine contained the faintest suggestion of a bloody shred or clot but no hematuria or stone. During this and succeeding attacks his manner was what is commonly called "hysterical," though he showed no hysterical stigmata. After frequently recurring attacks of the nature described, all physicians associated with the case being fairly worn out by the way he yielded to them, and his obvious danger of incurring the opium habit, I talked with extreme frankness and roughness to him about it, telling him, what I only half believed myself, that he was imagining the whole thing. I never saw him for six months, when, meeting me on the street, he told me that the talk had been the "turning point of his whole life," and that he had never had an attack since.

The early history of this case was positive as to his having had a calculus. Admitting the organic basis of his earlier trouble, he was a neuropath, had a "hysterogenous constitution" and was undoubtedly perpetuating his genuine nephritic colic indefinitely as a hysterical echo until "called down" and shamed into common sense. All surgeons who have operated for stone in the kidney and after cutting down, have found no stone or any other lesion of the kidney will find in the features of this case many points that resemble their own cases. It seems reasonable enough to conclude that insignificant trouble in the kidney, or anywhere else may, in a neurotic subject, by concentrating his thoughts to that region produce puzzling hysterical-organic symptoms.

VARIETIES OF PULMONARY TUBERCULOSIS.

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Most text-books give no divisions of pulmonary tuberculosis, which are of practical value either in prognosis or treatment, merely stating that some cases recover and certain cases die. The results in our sanatoria show that some apparently early cases fail to recover, or sometimes even to improve, under the excellent treatment which is given them. Some patients leave home and rough it and get well; others go away and, under the same conditions, fail and perhaps die. Many, as shown by autopsies, have the disease and recover without knowing that they have had it; others are near death before the disease is recognized.

During the past few years no disease has received greater attention or had more able minds devoted to it than has this same old scourge, consumption, and though much remains to be learned a more accurate knowledge of the disease is being obtained. A careful study of the pathological aspects of tuberculosis has shown the relation between the early and the healed process, also the condition of the lungs in arrested cases. The chronic, slowly progressive cases, the rapidly progressive localized cases and, finally, the general infections, have been thoroughly studied pathologically and are familiar. Now the problem is to learn to recognize these forms from a clinical point of view early in the process, for by doing this we come as near as is possible to being able to give a reasonable prognosis. Ability to prognosticate the probable course of the disease is of vital importance and will save many of the mistakes now made in sending patients far from home and among strangers to endure unnecessary hardships and disappointments, and will also aid much in individualizing treatment.

Putting aside for the moment the fact that patients with pulmonary tuberculosis can recover at home, the day is far past when it was justifiable to send patients away to face unknown conditions simply because they were found to have tuberculosis. No climate is a cure-all for any case of tuberculosis, and no climate is of advantage to all forms of it. No one treatment will benefit all cases of pulmonary tuberculosis, and the treatment which will cure some is a positive injury to others. The successful handling of a case of pulmonary tuberculosis, whether such handling consists of advice as to where to go for treatment or of the actual treatment itself, depends upon a recognition of the form of the disease and its probable course and upon the

characteristics and condition of the individual; not upon the single fact that he has tuberculosis. The known individual and not the disease should be treated. The writer has been trying for some time to get a classification of cases of pulmonary tuberculosis and from a study of his own patients and from the recorded experiences and researches of others has accepted the following as a general classification. Of course these forms are not absolute but merge into each other, and, indeed, different forms may be found in different localities in the same individual at the same time, or the disease may be masked by accompanying conditions in the lung, as bronchitis or emphysema. Yet a classification will do much to help us avoid mistakes and in other ways benefit our patients.

First: Localized fibrous form.—Nature's way of cure is by fibrous tissue, and these fibrous cases are the favorable ones. The disease begins in mucous membrane or pleura and fibrous tissue forms and encloses the diseased tissue, the fibrous extending much farther than the tuberculosis tissue. There is little or no necrosis of the lung tissue and little mixed infection. The process is slow and may be sharply localized or may become widespread. These are the most favorable cases and the ones that can endure the most vigorous treatment.

All cases which recover or improve give a certain amount of fibrous thickening, and the most favorable of all are those having a sharply localized tuberculous focus, usually at one apex. Fibrous thickening of that apex occurs and segregates the disease from the healthy tissue. Cavities may occur, hemorrhages may take place and caseous matter may be expelled; yet the disease remain localized. The apex may be considerably affected and recovery still take place because, not only does the shutting off of the disease area by fibrous tissue prevent the spread of the infection but it also limits the absorption of poisonous products into the circulation, thus preventing much of the possible constitutional involvement. Even though the original infection is quite severe, so that, before the fibrous tissue has time to form, a considerable tuberculous mass is present which later breaks down and forms a cavity of appreciable size, we have the disease arrested, and in time perhaps cured, if the lung has the ability to take on a marked fibrous change about the diseased area.

Usually, by the time these cases come under observation so as to be recognized the fibrous tissue has begun to form, and we get slight dulness with some râles especially after cough, and harsh breathing with prolonged expiration at one apex, with slight constitutional involvement. That is, the actual consolidation is slight; harsh breathing beyond the râles shows the fibrous involvement and the lack of systemic poisoning shows the lack of absorption. Cases in this stage are the most encouraging for climatic or other treatment and the majority of the cases the writer has seen recover have been of this form.

Second: Fibro-caseous form.—The disease may take on this fibrous form and arrest occur after a considerable portion of the lung substance has become affected. Then we have the formation of a large cavity, contraction of the lung, and, if it is on the left side, the uncovering of the heart. Even with marked local disease the patient may live a long time in fair comfort, but with lessening of the breathing capacity, shortwindedness and debility. Or, without the formation of a large cavity we may get an extensive thickening of the lung substance by the formation of fibrous tissue and marked contraction of the lung. This may be limited to one side or there may be bilateral involvement. This condition as the localized fibrous form, may become stationary and the patient live years with a lessened vitality, but, under favorable conditions in fair comfort, a little wheezy, perhaps, but, by the avoidance of dust, smoke and all excesses, may enjoy a quiet, hygienic and comfortable life.

Third: Fibroid phthisis.—Generalized fibrous form.—How far these cases are of tuberculous origin seems to be a subject for further study. The writer believes that many, at least, begin as a result of some other irritant than the tubercle bacillus and that when this is present it is as a secondary feature of the disease.

In these cases there are general fibroid changes throughout the lung. They run a chronic course and are found chiefly among persons exposed to the inhalation of irritating dust, such as miners and workers on emery wheels.

Fourth: Phthisis florida.—This variety is without the formation of fibrous tissue. It begins with a profound and active infection, is not shut off from the healthy lung tissue, the blood vessels are not closed by the growth and contraction of fibrous tissue and the absorption is marked. The patient becomes cachectic and has a high fever from the toxins of a mixed infection. The disease shows only very temporary abatement or none at all and the patient dies of toxemia without the disease spreading to other organs.

*Fifth: Chronic parenchymatous tuberculosis.**—Closely associated with phthisis florida is what Dr. W. N. Biggs, in the Medical News of April 25, 1903, describes as "chronic parenchymatous pulmonary tuberculosis," corresponding with Powell's "chronic tuberculous phthisis." This is the form which is most frequently sent from home to die. The onset is very insidious and it is the form which most frequently escapes detection in the early stages, being diagnosed by the patient or physician as "debility," "anemia" or "bronchitis." The disease begins and spreads in the intra-alveolar tissue without much involvement of the bronchial mucous membrane and is accompanied by very little secretion, giving little or no cough and expectoration unless non-tuberculous bronchitis is also present. There is an induration of the alveolar walls and a more

* I do not like the name "chronic parenchymatous tuberculosis," but as this name has already been used and I have no satisfactory substitute, I use it.

gradual necrosis than in any of the other forms except the fibrous. Although there is a thickening of the walls of the alveoli, there is not a distinct fibrous formation and no shutting off of the diseased area by a fibrous wall. The early stages are marked by a slight or moderate rise of temperature, anorexia, anemia and loss of strength, while there may be but little loss of flesh until the disease is advanced. Hemorrhage is rare. On physical examination, even in cases past the initial or incipient stage, we find on percussion but slight impairment of the resonance or of vocal resonance and fremitus. As the alveoli are not filled to any extent there are no signs of consolidation and there is no cavity formation. The disease is steadily progressive and later we get some dulness, but not flatness. Then the breathing is harsh, but not the bronchial breathing of consolidation, with subcrepitant or sonorous râles followed by coarse, moist râles. If the affected area is contiguous to the heart, the heart sounds will be transmitted with abnormal distinctness. The heart is usually rapid out of proportion to the fever. A prominent characteristic of this form of pulmonary tuberculosis is the marked general symptoms as compared with the physical signs as given by auscultation and percussion. This form is less rapid, though but little, if at all, less fatal than phthisis florida, and patients thus suffering should not be sent away from home with any idea of cure, and should never be sent away alone. They cannot stand as vigorous a treatment as is beneficial to the fibrous cases.

Sixth: Acute miliary form.—This may exist by itself, as where a bronchial gland breaks into the pulmonary artery, or as a part of a general miliary tuberculosis. Here we get a condition throughout the lung similar to the parenchymatous tuberculosis which is local in one part of the lung in the beginning. The miliary form does not advance to the stage of dulness and mucous râles before the system is overwhelmed by the absorption of toxins. The physical signs are those of the early stage of the chronic parenchymatous form, except that they are general instead of local.

POISONING BY THE WHITE OF AN EGG.

BY J. R. CLEMENS, M.D.,
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That the condition or rather idiosyncrasy of poisoning by white of egg must be a very rare one is evidenced by the fact that no mention is made of it in the literature, even Vaughan and Novy's "Cellular Toxins" being appealed to in vain. The case I am about to record is interesting from the difficulty of the differentiation of the cause and from the extreme susceptibility of the patient to the effects of even minute traces of egg albumin in the gastro-intestinal tract, the gravity of the seizure being apparently out of all proportion to the exciting cause.

The patient, a child of fourteen months, during a moderately severe attack of whooping cough that was already declining, was suddenly seized one afternoon with an attack of acute urticaria and alarming collapse, the face and ears being greatly swollen and the radial pulse withdrawn from the wrist. The child was apparently moribund, but hypodermics of strychnine tided over the crisis. Later the child vomited the contents of the stomach: water and mucus. The pupils were widely dilated during the attack and the face pale. The child rallied slowly and was the source of anxiety for the following two days.

Antipyrin and the vapo-cresolene lamp were laid under suspicion and both discontinued. Some two weeks later an exactly similar attack was experienced and this time, as both antipyrin and carbolic acid intoxication could be excluded with certainty, other causes for the condition were sought for in vain. A month later the child, after partaking of some custard, suffered within half an hour from an acute attack of urticaria of the face and ears with vomiting and purging. The cause of the attack was now evident. Three days ago, after eating a small piece of gingerbread cake, in the making of which two eggs had been used, the child was noticed to be limping and on examining the feet both were found to be extremely swollen and purpuric, petechiæ and ecchymoses extending up as high as the middle of the legs. There were no nervous symptoms.

Treatment consisted in cleaning out the gastro-intestinal tract with oil, followed by full doses of calomel as an antidote and later by salol and magnesium sulphate. The recovery was uneventful, the edema of the feet rapidly disappearing, although the child was allowed to stand and walk.

Points of interest bearing on the case are the facts that the kidneys are sound and that each attack was preceded by weeks of intestinal indigestion as evidenced by pale stools, flatulence, flabby muscles and broken sleep, a great amount of indican being observed in the urine. A short time prior to each of the first two alarming attacks the child had been given the white of an egg with his milk, which was an innovation. Whether the child would prove immune to eggs when in full health is an experiment I have no desire to make.

All four attacks were without incubation periods and must therefore have been intoxications. Atropine was contraindicated by reason of the condition resembling that of atropine poisoning. The family history is negative in regard to any such idiosyncrasy. The possibility of a future attack expending itself on the larynx must ever remain a cause of anxiety.

Dr. Bull Resigns from Columbia.—Dr. William T Bull tendered his resignation on Monday last as professor of surgery at Columbia University, to take effect June 30, and it was accepted. Dr. George E. Brewer, professor of clinical surgery, was assigned to a seat in the faculty of medicine. Dr. T. Matlock Cheesman was elected a trustee to succeed Dr. Edward L. Trudeau.

MEDICAL PROGRESS.

MEDICINE.

Antimalarial Operations.—Tropical medicine is apt to become as popular in this country as it is in England. J. W. W. Stephens (Lancet, March 5, 1904) recites the results of his experiments at Mian Mir, Punjab. He states that the commission of which he was a member became convinced that the fundamental measure in the antilarval crusade was drainage. The intensity of malaria, or as it has been called, the "endemic index" of a place, can be easily and accurately determined. It is necessary to examine a number of blood films, 25 is sufficient, taken from children under ten years of age dwelling in the district. This gives a percentage of those with parasites in their blood. Before the commencement of operations, all these conditions were accurately determined by a malarial survey. The importance of the introduction into sterilized regions, of *Anopheles* on carts, wagons and conveyances of various kinds, cannot be overestimated. It is discouraging to note that the report states that after two years of persistent work, as measured by the test of degree of improvement in the troops during the fever season, the outcome was *nil*. The conclusions of the commission in part were: First, that in quinine administration to the children and in abolition of infecting sources, one has the only means as yet devised for positively improving and safeguarding the health of the troops. In order that fundamental change, however, be made in the absolute well-being of camps situated in malarial districts, radical changes will probably be necessary in the entire system of irrigation and of water supply. For the time being, however, it is obviously necessary to depend simply upon quinine and segregation.

Some Observations on Kidney Cases.—H. Quincke (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 3 and 4) praises the action of potassium chlorate in cystitis, but urgently warns against its use where a pathological condition of the kidneys is suspected. In one case of congenital cystic kidney and in another of bilateral hydronephrosis, the drug hastened the fatal issue, though only four grams a day had been ordered. Since at one of the autopsies, an enlarged median lobe of the prostate was found, which had not been diagnosed during life, a sound with a lateral depression along its lower aspect near the tip was constructed, which is especially serviceable in such cases, since one can readily feel the depression pass over the lobe as the sound passes into the bladder, especially when the finger is inserted into the rectum. Attention is also drawn to a peculiar finding in the urine of a case of unilateral hydronephrosis; the sediment was rich in cells 24 to 36 mikra in diameter, with their entire cell-body filled with very coarse granules, disappearing after the addition of acetic acid. These elements were probably epithelial cells derived from the straight tubes altered by pressure; since they were subsequently found in similar cases; they are of diagnostic value and indicate that a slow atrophy is in progress. Fibrinuria is also occasionally observed here and in interstitial nephritis; the urine is often faintly alkaline and if allowed to stand, will deposit delicate filaments mixed with triple phosphate crystals.

Aortic Aneurism of Traumatic Origin.—Though by far the greater majority of aortic aneurisms have their origin in a syphilitic process within the walls of the artery, there is little room for doubt that trauma was the sole etiological factor in the case of A. Heller (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 3 and 4). A laborer was suddenly obliged to carry a very heavy weight, resulting in an acute dilatation of the beginning of the aorta with the tearing off of a portion of the wall. At the same time two aortic valves were torn, leading to an acute insufficiency with dilatation of the left ventricle. The resulting fall in pressure permitted the tear in the aorta to cover itself with intima, but the rest of the wall slowly developed into an aneurism. Microscopically the picture can be clearly differentiated from a specific process; in the one the elastic fibers of the media are everywhere pushed apart and torn, while in the other, a small-celled infiltration with giant-cells accompanied the nutrient vessels through the media and adventitia, while later portions of the media become necrotic.

Paroxysmal Hemoglobinuria Due to Cold.—In this peculiar form of hemoglobinuria, general exposure to cold or the mere immersion of a limb in cold water for a short period, will be followed by the discharge of a bloody urine. J. Donath (Zeitsch. f. klin. Med., Vol. 52, Nos. 1 and 2) removed some blood from the finger and placed it upon ice for a varying length of time, but could not detect any solution of hemoglobin, so that other factors besides cold must be at play. The blood was then actively shaken to determine if the corpuscles possess less resistance toward mechanical influences, but the difference from normal was so slight as to be unimportant. Simple ligation of an extremity sometimes gave rise to hemoglobinemia in the affected part, sometimes not. A number of other experiments did not lead to any very positive results, yet it seems likely that the entire process depends on a hemolytic action of the blood serum caused by the presence of serum hemolysins.

SURGERY.

The After-effects of Head Injuries.—There is no subject more rife with interest than this, because it touches upon the most vital part of man—the mind. T. C. English (Lancet, March 5, 1904), from an exhaustive study of the subject of traumatic epilepsy, late traumatic cerebral abscess and traumatic insanity concludes: (1) While some degree of mental impairment is comparatively common after injuries to the head, the changes are seldom sufficiently marked to be included under the heading of insanity. (2) Insanity may result from injury to any part of the head. (3) Traumatism leads to insanity in two ways, (*a*) direct insanity due to the actual injury to the brain or its membranes apart from hereditary or other predisposing causes; and (*b*) indirect insanity, that is to say, any form of insanity occurring as the result of lowered resistance of the brain due to injury in patients with a predisposition to insanity, hereditary or otherwise. (4) Every variety of mental change may be produced by traumatism, although some forms are commoner than others. (5) It is at present undetermined whether injury to the prefrontal region is more likely to be followed by mental disturbances than injury to other parts of the brain. (6) Only a small proportion of the cases of traumatic insanity are open to relief by operation, for a localizing indication in an accessible region must be present. (7) The results so far have been encouraging, and although the operation must necessarily be exploratory, it is fully justified in suitable cases, especially in face of the otherwise hopeless condition of these patients.

Oxygen Gas for Cystoscopy.—Carbolic, boracic and many other solutions have been used for this purpose, but all have more or less marked disadvantages. A. G. Faulds (Brit. Med. Jour., March, 1904) states that one of the advantages of using a solution instead of gas to distend the bladder is that the fluid dissem-

inates the heat and thus saves the mucous membrane from being injured. Unfortunately, however, it allows of the solution of blood and pus, which render the fields of vision obscure. Cold lamps, however, so called, are now fitted to cystoscopes, and these enable the operator to discard the fluid medium. It is well to distend a rubber bag, which contains the average amount expected of a urinary bladder with the oxygen and then slowly to force this through a tube into the bladder. The advantages of oxygen are obvious, particularly in the case of bleeding tumors or bleeding mucous membrane or purulent conditions. The oxygen undoubtedly has an ameliorating effect on any form of cystitis. It seems to give tone to the bladder wall and to purify the urine. If the cystitis should be marked, it may be necessary to use a local anesthetic. After removal of the cystoscope, the oxygen should be left in the bladder to exercise its disinfecting properties.

Lip Tie.—Cases of tongue-tie, while uncommon, are of sufficiently frequent occurrence to be well known. F. GRIFFITH (Ann. of Surg., March, 1904) states that a shortening of the frenum of the lips is not cited in literature. A case recently occurred in his practice which was so marked that the infant, a child of Italian parentage, presented this abnormality to such a remarkable degree that it necessitated operation. The midline of the entire upper lip had been bound to the gum by a fold of tissue continuous with the mucous lining of the mouth, one-eighth of an inch in thickness. The teeth were small but well formed. On opening the mouth, the middle of the upper lip rolled directly inward giving rise to a peculiar expression not apparent when in repose. The direct family history was negative. Treatment consisted in simple section of the frenum.

Penetrating Wounds of Abdomen.—Having positively determined that the wound has entered the abdominal cavity, there are two main questions to be considered, viz., Has any viscus been injured? Is hemorrhage taking place? Unfortunately there are no classic symptoms grouped about the penetration of stomach, intestines, spleen, liver or pancreas. Shock, it is true, subvenes sooner or later, but unfortunately in too many cases the first definite symptoms of perforation are those of the inflammatory reaction in the peritoneum which, when manifested, indicate, whatever the treatment, a lethal termination for the case. M. L. HARRIS (Ann. of Surg., March, 1904) states that the most important factors which have enabled surgery to produce a recovery percentage of over 90 per cent. instead of a mortality of 70 per cent., as was the rule under the old form of medical treatment, are, first, immediate operation, and second, drainage whenever the gastro-intestinal tract has been opened. After citing a large number of cases, upon which he had recently operated, the author emphasized the following points: (1) In penetrating wounds of the abdomen there are absolutely no known symptoms which indicate injury to any of the viscera except those noted above in connection with the urinary tract, stomach and occasionally the lower bowel. (2) Except those relating to general shock, all symptoms following such wounds indicate either internal hemorrhage or peritonitis. (3) To wait for symptoms of perforation of the intestines means to wait until peritonitis has developed, therefore (4) every bullet or stab wound which penetrates the abdominal cavity should be operated upon at the earliest possible moment, in order to anticipate the advent of peritonitis. (5) No time should be wasted in attempting to demonstrate the presence or absence of intestinal perforation by such means as the rectal insertion of gases or vapors, or the analysis of recollected intraperitoneally injected air or liquids. (6) It is essential to systematically examine the entire gastro-intestinal canal in all cases regardless of the point of entrance of the wounding body. (7) Whenever the alimentary canal has been perforated suitable drains should be placed either through the operative incisions or counter incisions, as may appear best suited to the individual case.

Surgery of Perforating Gastric Ulcer.—Thanks to the influence of Mr. Mayo Robson, the English physician is probably better prepared to diagnose this condition than his American colleague. This probably, rather than the belief held by some that the disease is more frequent in England than in the States, explains the divergence in the reported cases. William J. Mayo has done more than any other person in this country to impress upon one the frequency of gastric ulcer and the unimpeachable necessity of treating these cases by radical surgical procedure rather than by the temporization of medicine. ARCHIBALD MACLAREN (Ann. of Surg., March, 1904), in support of these statements cites the interesting facts that prior to the remarkable work of Lawson Tait, ectopic gestation was looked upon as a curiosity. Nowadays it is of very common occurrence; this simply because of the increased ability in diagnosis. Although the author believes ulcer to be as frequent in this country as abroad, he does not consider that perforation is at all as common. Out of Mayo's 313 operations on the stomach and the first portion of the duodenum, there were only five perforations. At the Massachusetts General Hospital, in 187 consecutive cases of gastric ulcer, there were but six perforations, all of which died. On the other hand, from 1897 to 1902, in 500 cases of gastric ulcers in the London Hospital, 48 died from peritonitis and perforation. Fenwick found that in 678 autopsies with open gastric ulcer, perforation had occurred in 23 per cent. Moynihan in the Lancet (January, 1903) reports 51 perforating duodenal ulcers, in most of which a mistaken diagnosis of appendicitis had been made. All authorities agree that whereas gastric ulcers are more common on the posterior wall, acute perforations are usually on the anterior surface. The posterior ulcers are of a chronic type and are apt to lead to subphrenic abscess. As is well known, the premonitory symptoms of gastric ulcer are usually well marked. In a certain proportion of cases, however, these may be absolutely lacking and it is interesting to note that this is the condition which exists typically in the ulcers of the anterior wall, which, as before noted, are of the acute perforating variety. The immediate symptoms of perforation are the agonizing, overwhelming pain which, as stated by Fenwick, often causes the patient to fall unconscious to the ground. Hart, of Philadelphia, is, in the opinion of the author, correct when he states that rigidity of the abdominal muscles is the keynote to the early recognition of peritoneal perforation from whatever source. The pain may subside, the temperature likewise, but the rigidity will continue to the end. Vomiting is seldom present with perforation. Subacute or chronic perforations do not present such typical symptoms. They are milder and slower in development, often giving the classic symptoms of a local peritonitis or of an intraperitoneal abscess located near the stomach. The obvious treatment of all these cases is first to give enough morphine to still the terrible pain and then, without delay, have the case removed to a hospital. Operation at the earliest possible moment is indicated, the mode of toilet of the peritoneum being determined by the amount of escaped contents. In every case the Fowler position should be used.

Operative Treatment of Habitual Subluxation of the Patella.—As is well known, this annoying lesion is most difficult to treat. The sesamoid duplicature of the patella tendon almost invariably dislocates outward,

the cause of this being probably a double one. First, because of the nature of the articular surfaces, and second, because of the moderate amount of knock knee which is always present in a varying degree. When the quadriceps contracts, the tendency is to throw the patella out, because the line of force is a triangular one. Ali Krogius (Zntrlbl. f. Chir., March 5, 1904) cites some of the methods which have been employed for the correction of the deformity. Bajardi has resected a portion out of the median line of the capsule. Le Dentu and Bardenhauer have adopted various methods of reducing the size of the capsule. Roux has transplanted the ligamentum patella. Lucas-Championnière and Pollard have endeavored to accomplish the same means by a deepening of the patella fossa. Heineke has transplanted the tuberosity of the tibia. Trendelenburg has endeavored to raise the outer condyle of the femur. Of all these methods, the capsule splitting of Le Dentu, either in its original form or in Kocher's modification, seems to have the widest range of use. In the case under consideration, there was no indication for bone operation, and because of the discouraging ease and persistency with which the patella was dislocated to the outer side, it did not seem as though the ordinary plastic operation of the soft parts would suffice. The method chosen was as follows: On the outer margin of the knee a curvilinear skin incision is made, similar to that employed by Kocher for resection of the knee. The flap is then carefully lifted from the center of the knee over the patella and also laterally, so that the whole front portion of the knee is exposed. Next a cut, one millimeter distant from the outer margin of the patella, is made. It begins a finger's breadth above the patella and ends opposite the tuberosity. This cut transfixes the iliotibial band over the lateral tendon of the vastus internus. The incision is then carried down through the tissue of the vastus internus, following so nearly as may be in the directions of the fibers of the muscle. About two fingers' breadth to the inner side of this a second incision is made parallel to the first in the lower portion, but diverging above. The flap is then raised and the defect repaired by catgut suture. This bridge-shaped strip is then carried across the patella and held in position on its outer margin with catgut sutures. The skin wound is then closed and the leg immobilized for three or four weeks. In particularly aggravated cases, this operation could be combined with the transplantation of the insertion of the ligamentum patella to the inner side. The results of this technic are good.

Renal Decapsulation for Unilateral Hematuria.—The old teaching that whenever hematuria was present, the cause was probably stone, tuberculosis or malignant growth in the kidney or papilloma of the bladder, has been somewhat upset by the impetus which has been given to investigation of this subject through the efforts to cure through decapsulation. Leonard Freeman (Ann. of Surg., March, 1904) states that tuberculosis is probably the most frequent cause of obscure renal bleeding. Next in frequency comes chronic nephritis, usually of the interstitial type and often attacking the glomeruli. It may be bilateral or unilateral. It may involve the entire kidney or appear in small portions of the organ only, which has often, no doubt, led to its non-recognition. Few physicians, the author states, seem to be aware that copious and prolonged hemorrhages may arise even when the disease is limited in extent. The precise manner in which decapsulation acts in these cases is not thoroughly understood. Inasmuch as other operations, particularly nephrotomy, acupuncture, and even simple exposure of the kidney by lumbar incision have severally accomplished precisely what has justly been claimed for decapsulation, namely an entire relief of the symptoms, the profession is in the dark as to the precise mechanics of the improvement. Nephropexy has not been inconspicuous in giving relief from hematuria, and, while there are those who have asserted that nervous influence is the principal therapeutic feature in all these operations, Senator is convinced that it is a mere breaking up of adhesions or the fixation of a more or less movable organ which cures. Many have claimed that these good results, especially in a case of nephrotomy, were due to relief of the tension through division of the fibrous capsule. Others contend that the result is obtained by relief of congestion through the establishment of new blood vessels in the adhesions following operation. Operations for the relief of hematuria are still *sub judice*. It is therefore appropriate to relate the following case history: The patient was an Irishman, fifty-nine years old, anemic and emaciated. Twenty years ago he first noted blood in his urine. The hemorrhage was often profuse, the urine being opaque from blood and often thick with clots. For a year previous to the operation he had bled constantly and profusely, so that he had become all but exsanguinated. At various times during the illness pain was felt over the bladder, but none along the ureters or over the kidneys. There were at no time signs of uremia. Internal medication failed absolutely. Segregation showed the bleeding to come from the left kidney alone, the right side being normal. The hemoglobin per cent. was about thirty. The left kidney could not be palpated. No evidence as to the origin of the hemorrhage being detectable, a provisional diagnosis of chronic unilateral interstitial nephritis was made. At operation the kidney, which was normal in size, was shelled out of its adherent fatty capsule and decapsulated. The surface was granular and the fibrous capsule was also adherent. Considerable hemorrhage from the cortex occurred, which was with difficulty checked by prolonged pressure. Recovery was uneventful. The blood vanished from the urine, which became entirely clear within eighteen hours from the time of operation. During the ten weeks which had passed since decapsulation, there had been no signs of hematuria. Analysis shows it to be normal, a condition which had not existed for twenty years, because casts and albumin had been present in great quantities for an indefinite period prior to operation. A piece of the cortex, which was removed during operation showed advanced glomerulo-nephritis, and advanced arteriosclerosis. The author's conclusions are as follows: (1) The prominent cause of renal hematuria, which is often unilateral, is chronic interstitial nephritis, often involving the glomeruli. (2) This, together with other obscure causes must be excluded before a diagnosis of "essential hematuria" can be made. (3) Decapsulation of the kidney is indicated in these cases, as it offers a good prospect for cure of both the hematuria and the nephritis. Nephrectomy should be discarded on account of probable involvement of the other kidney.

THERAPEUTICS.

Improvements in Dietetic Diabetics.—Although many efforts have been made to improve upon the present method of treatment of diabetes, it must be confessed that the dietetic treatment is fundamentally the best at hand. James Sawyer (Brit. Med. Jour., March 5, 1904) states that it has long been recognized by the profession that the decrease in sugar and specific gravity in the urine are almost invariably marked by profound improvement in the general bodily conditions. It has therefore been the effort of many practitioners to make out dietary lists which shall be as little objectionable as possible. Until the researches of Mossé

were published two years ago, it had been the almost universal rule to withhold potato. The potato contains from 16 to 24 per cent. of starch. Mossé has concluded, however, that potatoes, far from being harmful, form a useful and beneficial food in glycosuria and that they are capable of being substituted for ordinary wheat bread in daily proportion sufficient to maintain the alimentary ratio. He found that a daily ingestion of two to three pounds of potatoes effected marked improvement in 19 out of 20 cases of diabetes. Singular to relate, they were instrumental in relieving the thirst. Possibly the potash, which is present in a large quantity in the potato in various combinations, is instrumental in making this tuber such a favorable article of diet. The author considers that the introduction of potato will prove to be the most important therapeutic advance made in late years in the treatment of diabetes. In order to preserve the potash and other salts, it is most essential that the potato should be cooked with its skin on. The author has prepared delicious baked cakes from a paste composed of a kind of flour prepared by rubbing down potatoes cooked with their coats on by steaming, blended with cream and butter. Bread and biscuits of a palatable kind can be made from bran and this potato flour. This seems so practical and useful a step that the details are welcome. They are as follows: Half pound of steamed potatoes, one-quarter pound bran, half an ounce of German yeast, half an ounce of butter, one egg. Twenty-four hours before making the dough, cook the potatoes by steaming them in their jackets, then peel and break up into flour with the fingers. Mix all the ingredients together and let the paste stand by the fire for an hour to rise. Bake for an hour and a half.

Treatment of Anchylostomiasis.—This disease has been shown to be so rife in many of the Southern States, that a consideration of its treatment is a desideratum for all. C. W. BRANCH (Brit. Med. Jour., March 5, 1904) states that it is by no means the experience of those who deal largely with *Anchylostoma*, that, as is stated by Prof. Stockman, they are readily killed by large doses of thymol. The author's routine is to give 30 grains of thymol in powder at 4, 6, 8 and 10 A.M. on an empty stomach followed by one ounce of castor oil at 6 P.M., that is, he uses 120 grains in the first treatment. Smaller doses are known by those who deal largely with this condition to be ineffectual. Even with these large doses, fully half the cases are not absolutely freed from the parasite. This dose of 120 grains of thymol may be given with absolute impunity, regardless of age. Children of three years take it without trouble. It should be noted that if, as is customary, these patients are coincidentally put on iron tonics, they will at once begin to improve with the disappearance of the anemia, whether or not the worms have entirely been cleared out of the intestinal tract. The practitioner must not be deceived by this improvement, which will be found to depend entirely upon the iron and which will cease after the worms begin reproducing in numbers, as they will, unless thoroughly killed and eradicated.

Treatment of Basedow's Disease.—The milk of goats deprived of their thyroid gland has given excellent results in Basedow's disease, but most patients cannot bear its prolonged use. As substitute, W. KUHNEMANN (Münch. med. Woch., March 8, 1904) recommends rodagen, a preparation obtained by precipitating the milk with alcohol To insure himself that the improvement really came from the drug, the author ceased giving it, when the pulse-frequency again rose and the patient lost in body-weight.

Lumbar Puncture in Uremia.—The astonishing statement is made by A. SEIFFERT (Münch. med. Woch., March 8, 1904) that most cases of uremia complicating scarlet fever can be cured if treated by lumbar puncture. The technic is very simple: the patient is simply placed in the lateral position and punctured between the twelfth dorsal and the first lumbar vertebræ; as soon as the fluid appears, 5 to 30 grams are aspirated by means of a syringe. The initial and ofttime fatal convulsions of scarlet fever and measles also yield readily to lumbar puncture and a trial in purely renal conditions and in eclampsia is certainly indicated.

Influence of Dog Serum on Experimental Tuberculosis.—Despite the fact that the dog is exposed to tuberculosis more than most other animals, cases of infection are only rarely seen by veterinary surgeons, probably because some natural immune bodies are present in the serum. This observation has stimulated R. LINK (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 3 and 4) to try the effects of injections of dog serum upon rabbits experimentally inoculated with tuberculosis. In every case parallel experiments were made and the eye was generally selected for inoculation, as here the development of the lesions could be best observed. The results are rather discouraging since a favorable influence could not be absolutely proven, though in a few cases the disease seemed to run a milder course. The nodules on the iris occasionally showed a tendency to heal and at the post-mortem examination fewer tubercles were found in the organs, but an active immunization was never seen.

The Action of Organic Iodine.—The principal desiderata in iodine compounds for internal medication are: the presence of iodine in sufficient quantity to be productive of physiological effect, the absence of irritating properties, assimilability and the absence of other chemical compounds which might directly or remotely interfere with the action of the iodine. G. F. LYDSTON (Medicine, March, 1904) claims that these desiderata are all to be found in the organic preparation of iodine known as iodo-nucleoid. He found by experience that it was non-irritating and readily assimilated. It was less likely to produce iodism than the other salts of iodine, and being perfectly stable, could be administered in pill or powder form. While he is not prepared to state that it fills the rôle of iodide of potassium in every instance, he believes that in many cases which are intractable to the action of iodide of potash, excellent results are obtained from the iodo-nucleoid. Experiments were also made to determine whether more iodine could be retained in the body from the potassium iodide or from the iodo-nucleoid. It was found that 8 per cent. of iodine was retained from the potassium iodide, and 64 per cent. from the iodo-nucleoid.

Subcutaneous Feeding.—The subject of subcutaneous introduction of food has been a very unsatisfactory one, for hitherto only sterilized oil proved suitable. Kalodal, a proteid obtained from meat has been extensively tried by D. CREDÉ (Münch. med. Woch., March 1, 1904) and seems to be eminently suitable before and after operations in weakened individuals, since it can be sterilized and is not followed by pain or albuminuria. Instead of giving a plain infusion of saline solution the author now invariably adds five grams of kalodal in 500 grams of fluid, which he introduces under the skin at two different sites. This can be repeated every six hours, so that the patient receives twenty grams of albumin or 82 calories subcutaneously every day. Since a cachectic individual requires only about 27 grams, the advantages are evident. If an attempt is made to concentrate the solution, small amounts of albumin will appear in the urine but the amount can be considerably increased by adding kalodal to nutritive enemas, as it is very rapidly absorbed from the rectum. The drug is on the market in sterile solution in glass tubes.

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SATURDAY, APRIL 16, 1904.

INFANT MORTALITY AND FOUNDLING CARE.

Our editorial in the Medical News of March 26, "The Decrease of Foundling Mortality" has brought to us a number of requests for more definite information with regard to the possible increase of infant mortality in New York city in the families of those who after the death of their own child adopt foundlings. We are glad to find that there is so much interest in this important subject. We are sorry that we cannot give definite statistics in the matter, since as it is easy to understand, a special investigation over a wide field would have to be carried out in order to furnish them. The only data for our declarations in the matter are the opinions of physicians whose attention has been called to the subject by their experience in such families, but who are quite positive in their assertions that there is room for more than suspicion with regard to the high infant mortality that obtains.

It might seem utterly lacking in all faith in human nature to attempt to demonstrate that mothers should neglect their own children to such an extent as to cause an increased mortality among them simply for the purpose of being enabled thus to add to the family income by adopting a foundling. The investigations of several Parliamentary committees in England and, we believe, also of one public health department investigation in France, has shown, however, that whenever the life insurance of infants is allowed, infantile mortality increases among the insured. Not that there is actual direct doing to death of the children under these circumstances, but that there is a more or less unconscious neglect of a number of precautions necessary to maintain the child's health, and above all, when the child is suffering from serious illness a certain failure to supply that self-sacrificing devotion which is so necessary to preserve the life, particularly of a delicate child, when death threatens and only unceasing care can avail. Mothers probably do not quite realize what tempts them to be somewhat less careful of their children than they otherwise would be, but the temptation is there and the effect is to be seen in the mortality lists.

There is another phase of the question that seems worth calling to public attention at the same time. There is no doubt now that in the hands of midwives the infant mortality among new-born children in the foreign populations of New York city is appallingly high. It has been said over and over again that we cannot get along without the midwife, since many of our foreign born population will not employ regular male physicians and since, besides, there is often not sufficient money to pay properly for the services of a regular physician. The immense infant mortality that occurs under midwives' care might, it would seem, keep mothers from employing them as much as is now the case, for, after all, it is not a difficult matter in almost any part of New York city to secure through one of the many charitable organizations the services of a physician without charge.

One reason why this high mortality among children delivered by midwives seems not to deter many mothers from employing such help in labor is the feeling that even if their child does die there will be the compensation of having the opportunity to adopt a foundling, and thus add materially to the family income. After all, it must not be forgotten that $10 or $12 a month, when the only wage earner is obtaining less than $50 a month, is a very important addition to the means of a family. It is even more than might be the single $50 or $60 that would be obtained as insurance for a dead child. To some doctors it has even seemed that sufficiently long efforts were not made to resuscitate apparently dead stillborn children, because of the fact that a dead-born child is not under these circumstances so

serious a misfortune as it is under ordinary conditions.

Such consideration may seem far-fetched, but human motives are wonderfully complex, and sociological studies serve only to show what apparently trivial factors may tend to swing the balance of human action along particular lines. It is with the idea of calling attention to this subject as a field for investigation on the part of the charitably inclined, who are at the same time interested in sociological problems, rather than definitely to accuse present conditions that we entered upon the discussion of this subject. We have no doubt at all that there is more in it than has usually been considered, and we would welcome contributions from physicians whose experience seems to show that present conditions in the decrease of foundling mortality are not so entirely without their compensating evils as has sometimes been thought. We may say that we expect to publish some articles dealing with this aspect of medical work among the poor of large cities before long.

"IN HOC SIGNO."

Not only by the precepts learned at our grandmother's knee, but by the teaching of our great medical authorities do most of us believe that a scarlatina patient who is "peeling," is a chap to be avoided. If this fond belief is to be torn up and taken from us, the sooner it is done the better.

That we are, the world over, agreed as to the danger of scarlatinal scales can be inferred from the following quotation from Osler:

"When desquamation begins, the child should be thoroughly rubbed every day or every second day with sweet oil or carbolated vaseline, or a five-per-cent. hydro-naphthol soap, which prevents the drying and the diffusion of scales." Holt—Diseases of Infancy and Childhood, states that: "Even the mildest cases should be isolated for four weeks, and all cases until desquamation is complete."

So thoroughly is this idea of the infectiousness of the scales engrafted upon the professional mind, that the picture of unfortunate adults who, failing to peel propitiously, have as a consequence been incarcerated for six or seven weeks, is not uncommon. There they sit in their solitary pens slowly and painfully grinding the refractory skin from their soles and from the palms of their hands with a block of pumice! It makes one think of Booth's memorable picture of Shylock whetting his knife upon his sole. If the undesirability of this enforced confinement is objectionable from the standpoint of expense to the community, how infinitely more is it so from that of offence against the individual! Grinding one's sole down with pumice stone seems to be more a desideratum for the complaining moralist than for the practitioner of medicine.

R. E. Lauder, Medical Superintendent of the Borough and Port Fever Hospital of Southampton, England, who has had a vast range of experience in the treatment of scarlet fever, states, in the *Lancet* of March 12, 1904, that as a result of careful observations and studies bearing upon the etiology of the so-called "return" cases, he became a year ago thoroughly convinced, theoretically at least, that he was working from a fallacious standpoint. He therefore determined to alter the entire policy of the hospital which bore on prophylaxis. Needless to say this had in the past been carried out under the assumption that desquamation was the prime factor in determining non-infectiousness of the convalescents.

The Southampton Isolation Hospital is a refuge not alone for the Port, but also for a broad territory in and about the city. So many patients who from a basis of "desquamation" had been discharged as absolutely harmless, had without any doubt infected others after their dismissal, that in this hospital, as well as in many others throughout the world, complaint was being freely made that the so-called "isolation" provided by them was not of sufficient value to compensate the public for the support of maintaining these institutions. If the conclusions reached purely as a result of these agitations result in the establishment of an entirely new basis of protection giving, it will at least show the value of adverse criticism. The new methods adopted are as follows: Before removal from the ambulance, each patient is carefully examined and undoubted cases of scarlatina are put into an "acute room," being kept there until the acute stage of the disease is passed and diphtheria has been excluded by bacteriological examination. At the end of the third week of the disease, if free from complications, patients are transferred from the general ward to another pavilion, which has been thoroughly disinfected. Here they are kept for one week, noses and throats being douched daily. At the end of this time, viz., in the fourth week of the disease, they are discharged from the hospital,

no matter what the condition of desquamation may be.

The tabulated forms show the following results: In 1892, 208 cases were removed to the hospital; 164 were discharged. Their average stay was forty-eight days. The number causing "return" cases was seven. In 1903, 353 cases were removed to the hospital; 325 were discharged; thirty-four days was the average stay, and the number causing "return" cases was seven. In other words, in 1902, the percentage causing "return" cases was 4.27. In 1903 it was 2.15. The percentage after forty-eight days' treatment was almost double that which followed thirty-four days' treatment.

Thus it appears that prolonged stay in the hospital and absence of desquamation do not assist in preventing "return" cases but actually seem to favor them. That the respiratory tract rather than the dry scales, which are thought by the author to be but the harmless products of toxic elements, is the responsible focus of infection is substantiated by the observation that evidences of infection often follow operation on the upper respiratory tract. Furthermore, constitutional symptoms and fever are as a rule proportionate to the condition of the respiratory passages and a great majority of return cases is associated with a history of contact with a convalescent suffering from upper respiratory discharges.

In view of the apparent difficulties hedged about the building of suitable isolation hospitals in this city, it may be interesting, if true, to note that this new basis of prophylaxis, if instituted, would increase the existing hospital facilities by about one-third.

CIRRHOSIS OF THE STOMACH.

It must now be admitted that the evidence upon which Andral, Cruveilhier, Brinton, Wilkes and others sought to establish differential points between diffuse carcinoma of the stomach and benign cirrhosis, was imperfect. Of late years the condition has been given abstract or more or less academic recognition, but no definite effort to base differential diagnosis of the two conditions in the light of modern gastric pathology has yet been brought to a focus. Osler recognizes the condition and reports a particularly characteristic state. Einhorn says that a benign cirrhosis does occur. Hemmeter writes that the pylorus may be the seat of a hypertrophic stenosis and that in rare instances the entire stomach may be involved in this process. German pathologists give little attention to the condition. The French pathologists, Bret and Caviot, maintain a negative attitude. Most Continental writers in general agree that the condition looked upon by the English-speaking pathologists as benign cirrhosis is in reality an evidence of low grade malignant change. This belief they base upon the fact that although no evidence of carcinoma is to be found in the wall of the stomach, the lymphatic glands draining the organ show signs of involvment.

The *Annals of Surgery*, March, 1904, contains a monograph by John G. Sheldon on the subject which is as rich in bibliographical details as it is in original suggestions. There are so many people wandering about the country, utter physical wrecks, traveling hopelessly from local practitioner to town practitioner, thence to the specialist of the neighboring city and finally to the well-known investigator of gastric lesions in some great University center, gaining nothing but hardship, losing hope and strength, a blight upon and a menace to the medical profession at large, that it is expedient to have all progress made in the rational treatment of these cases scattered as broadly as possible among the general practitioners of medicine. The case detailed by Sheldon went through exactly this itinerary, except that the final brilliant cure is repeated in but a small proportion.

Because of these facts; First, that such cases are common; second, that under medical treatment they obviously can obtain no relief; third, because of the just opprobrium which comes to the profession through its inability to cope with them, the details of Sheldon's case are well worthy of quoting.

The man under consideration was fifty-two years of age. He was perfectly well until fifteen years ago. From that time, his symptoms can be divided into four periods. For the first six years, he was troubled with sourness of the stomach, poor appetite, dull pain, belching of gas and a coated tongue. These symptoms slowly progressed. At the end of the sixth year he felt well only at short intervals. During the next four years, from his forty-fifth to his forty-ninth year, his symptoms gradually became more severe, but he continued to work on his farm. During these eleven years of suffering he had received no treatment. Neither had he taken medicine of any kind. During the last three years of his illness he was unable to work on account of weakness and suffering. Abdominal pain was nearly

always present. It was sometimes dull and gnawing, at other times the paroxysms were so severe as to require morphine. The pain was always in the median line of the abdomen above the umbilicus. It was never located in a small area and never radiated. Ingestion of solids or liquids increased its severity. Vomiting sometimes gave partial relief. Next to pain, it was his most distressing symptom. Sometimes it occurred immediately after eating, sometimes not before two or three hours. He often vomited food that he had eaten forty-eight hours before. His appetite was always good till the last year of his illness.

In one of the great eastern cities, a diagnosis of gastric ulcer was made and rectal feeding resorted to for three weeks. During this time he improved. On returning home, he began to eat and the old symptoms returned.

Physical examination was negative. Laboratory examination showed the gastric contents to yield no hydrochloric acid. The red cells were 2,800,000, the hemoglobin 48 per cent. Inflation of the stomach was puzzling. Its outline could not be determined by external examination. On operation, the stomach wall was found to be at least one centimeter in thickness. It cut with resistance and the cut surface looked like fibrous tissue. The gastric mucosa was smooth and atrophic. A Murphy button was used to perform gastro-enterostomy.

Three months after the operation this patient had gained 36 pounds. Enough time has now elapsed to positively exclude the presence of malignant growth, no evidence of which could be found at the time of operation. There is therefore no other alternative than to believe the lesion to have been a benign cirrhosis.

The etiology of this condition is only vaguely known, because not more than ten cases have been recorded with any degree of definiteness. The average age is about fifty years. Men and women are equally affected. Alcohol does not seem to play an important part in the causation of the disease. Ordinarily it is unassociated with other diseased conditions, cicatricial changes in the liver, spleen or kidneys not having been mentioned in any case. The symptoms have in general been those of long standing and obstinate dyspepsia. Physical examination was found negative in all but one case. In this instance a movable tumor was discovered in the region of the stomach which proved to be a conglomeration of non-malignant tissue due to trauma.

Sheldon concludes that the following conditions would point to the diagnosis of gastric cirrhosis: (1) Long standing disease (2) absence of vomiting of blood; (3) a contracted stomach; (4) absence of a tumor on palpation; (5) absence of glandular or hepatic involvement; (6) improvement of the patient generally and relief of the stomach symptoms for a considerable period of time when rectal feeding is resorted to. Obviously the treatment indicated is gastro-enterostomy.

ECHOES AND NEWS.

NEW YORK.

New York Academy of Medicine.—The Section on Medicine will hold a meeting Tuesday evening, April 19, at 8:15 o'clock. Following is the program: I. Presentation of Cases. II. Clinical Reports: (1) Tabes with Early Appearance of Charcot Joint, with exhibition of patient, by W. B. Noyes, M.D.; (2) Myxedema, with exhibition of patient, by H. S. Patterson, M.D.; (3) Typhoid Fever with Repeated Chills, by John Howland, M.D. III. Papers: (1) The Isle of Man as a Climatic Station, by James K. Crook, M.D.; (2) Who is Underfed? by Heinrich Stern, M.D.

Health Department Appointment.—Dr. John A. McCorkle, of Brooklyn, was chosen last week by Health Commissioner Darlington as a member of the advisory board to the Health Department. The position is honorary.

Dr. Lederle's New Venture.—Dr. Ernst J. Lederle, Health Commisisoner in Mayor Low's administration, has established a laboratory for sanitary, chemical, and bacteriological investigations. Associated with him are Joseph A. Deghuee, Ph.D., and R. C. W. Wadsworth, his secretary while health commissioner.

Reception to Dr. Paul Ehrlich.—Last Saturday a reception was given to Dr. Paul Ehrlich by Dr. S. J. Meltzer, which was attended by a large number of distinguished scientists from New York, Boston, Philadelphia, Chicago, Montreal and other cities. Coming at the close of the session of the Association of Pathologists and Bacteriologists, many members of this body, coming from over the entire United States, were present. This gave the gathering a particularly cosmopolitan aspect.

Home for Incurables.—The will of Julie F. H. Nevins, filed last week in the Surrogate's Court, leaves $1,000,000 to build and maintain a home for the aged. The proposed institution is to be known as the "Henry Coffin Nevins Home." The trustees are the Central Realty Bond and Trust Company, Smith Mason, and Miss Ida Mason, Joseph Neuscheler, and Charles Strauss. Mr. Strauss said that no definite steps had yet been taken toward carrying out Mrs. Nevin's plans. It would take some time to get the trust into shape, and meantime the trustees were considering sites. He could not say whether the home would be established within the city limits or in the country. It will accommodate 100 persons.

Hospital Appointments.—The following men at the College of Physicians and Surgeons received appointments during the past week as follows: Lying-in, C. T. Stevens; R. N. Prentiss, M.D., 3rd year; M. D. Thomas; C. E. McNenney. The S. R. Smith Infirmary, C. A. Holmes. The J. Hood Wright,

R. H. Breed; H. N. Moeller; W. C. Bartrum. Paterson General, E. D. Royall. Roosevelt, A. M. Clark; B. W. Paddock; F. D. H. Coerr; J. C. Dingman; T. L. Saunders; J. S. Thomas; A. Van der Veer, Jr.; P. H. Ringer. New York, 1st, Edward Cussler; James Greenway; W. Gillespie, M.D., P. & S., 1903; H. W. Lathrop; W. F. Burrows.

Resolutions on the Death of Dr. John Metcalfe Polk.—At a special meeting of the Class of 1899 of the Cornell University Medical College, held April 4, 1904, the following resolutions were unanimously adopted:

Whereas, we have learned with deep regret of the death of our classmate, John Metcalfe Polk, M.D.;

Resolved, that in the death of Dr. Polk the class of 1899 loses one of its most promising members, and that the medical profession is deprived of one whose career opened with unusual brilliancy.

Resolved, that we tender to the family of our late fellow-student our heart-felt sympathy in their great bereavement.

Resolved, that a copy of these resolutions be forwarded to the family of our deceased classmate, and that they be sent for publication to the medical journals of this city and to the *Cornell Alumni News*. Frederick L. Keays, R. J. E. Scott, William J. Jones, *Committee*.

Basilar Meningitis.—There have been a number of cases of acute cerebrospinal meningitis in this city during the past month and some have gone so far as to declare it an epidemic which is, however, at the present writing far from the truth. At the Health Department on April 8th it was said that, while the number of cases of meningitis did not warrant the statement that it is epidemic among children, there has been a marked increase in the number of cases, many of which have proved fatal. For the week ending April 2, there were 31 deaths reported for this disease, and for the week previous, 26. By far the greater number are in Manhattan, and the deaths for a month in that borough indicate how rapidly the disease has spread. During the first week in March there were 6 deaths, in the second 13, in the third 10, and in the fourth 24.

The Alumni Association of St. Luke's Hospital.—On April 8, 1904, this society held a meeting. A paper on radium was presented by Dr. Robert Abbe, who also showed specimens of radium obtained from the Curies in Paris and from Germany, and demonstrated the Piffard ultraviolet light. The Austrians have cornered the market on radium and the Curies have no more for sale, but Dr. Abbe showed the plates of experiments by which he was able to prove that the Austrian product of 1,000,000 strength was not so strong as the Curies' 300,000 specimen. That the luminosity is no indication of the chemical activity was also well shown by a series of plates. Many experiments have been made by the speaker, and he has found that *Amœbæ* and other protozoa are much affected by the rays, that ant larvæ, though not killed, were prevented from developing, and, as had been shown by others, that moth larvæ failed to develop into adult moths, but continued to live an exceptional length of time as larvæ. Bacteria are very little affected. Dr. Abbe has used radium in a number of cases of lupus and epithelioma of the face and jaw, and cancer of the breast. He was able to report remarkable success in several of these, and showed photographs and casts taken at regular intervals. One noteworthy case was an epithelioma of the lower jaw, another was a recurrent cancer involving the whole left breast. In the latter case, casts and photographs were made every six weeks, and they graphically showed the marvellous and progressive dwindling of the neoplastic tissue. He was not able to say that the radium emanations would penetrate far into the tissues, for he had found that the insertion of radium beneath the skin of a rabbit had absolutely no effect, while the same radium placed on the skin would cause a dermatitis. In the treatment of superficial new growths, he would place the knife first, then the X-rays, and after that, radium.

Dr. Charles T. Dade said that at the skin department of the Vanderbilt Clinic the use of radium had been abandoned. In epithelioma of the face it had no effect on the pearly border, and a curetted area healed more rapidly than another area exposed a great many times to radium. It had also failed in lupus vulgaris and in lupus erythematosus.

Dr. F. S. Meara spoke of the remarkable similarity of the phenomena produced by two entirely different physical forces, the X-ray being a species of ether waves, while the radium effect is produced by actual particles of the radium which are hurled into space. They are much smaller than atoms and theoretically can pass through the human body with ease.

Dr. J. E. Traub reported some experiments done with Dr. Sinclair Tousey with radio-active solutions. Some of these have already been reported by Dr. Tousey. A dog given radio-active saline infusions intravenously showed no change in general health or in blood pressure. Fluorescein solutions placed in the stomach gave a very clear picture of the borders of the organ when an electric lamp was inserted. In making radio-active solutions an open tube must be employed.

The Cat Nuisance.—In view of the proposed changes regarding the licensing of certain domestic animals in this city it may be well to speak a word as to the need for such legislation. Nearly everyone has had something to say upon the question of allowing dogs in the streets and public buildings, but cats have so far escaped the attention that is certainly their due. Through our dog muzzling ordinances we have succeeded in enlisting the strong arm of the law against disease, as it is transferred from the canine to the human species in the form of hydrophobia; but attention is now called to the fact that cats also are sometimes a source of conveyance of specific microorganisms. Although this may be a rather rare circumstance its possibility must be admitted by all, and the reporter happens to know of two cases where diphtheria was carried from one house to another by an immune feline whose responsibility was directly and absolutely proven when it was too late to save the child to whom the bacilli were thus conveyed. There is, however, one phase of the question which though not immediately dangerous to public health is certainly very annoying, and that is the various maneuvers which these animals go through in securing for themselves the removal of waste products of metabolism and in carrying on the reproductive function. This matter has been for some time a favorite subject for non-pet-loving individuals in their letters to the daily press, but nothing has come of it save a harmless bit of humor now and then, and the satisfaction that "constant reader" derives from seeing his philanthropic and finer thoughts in print. There is certainly enough proof of this condition of things even for the most bigoted anti-vivisection or anti-ordinance devotee; for it is only necessary to stroll about the walks, particularly those in the vicinity of the parks, to obtain evidence that must be convincing. Just at

present, however, one's attention is being strongly directed to the night orgies of promiscuous bands of cats in the neighborhood of his bedroom window. It would seem that the oft-quoted bit of verse, "in the spring a young man's fancy, etc.," is most reprehensibly applicable to the feline species at this season; at any rate, one who cannot sleep during the day is to be wofully pitied. The yowlings of these "pets" probably simulate a human cry more closely than the outcries of any other animal, and when constantly keyed up to the highest pitch from 10 P.M. until 4 A.M. life becomes indeed a responsible thing. Now the law recognizes the right of every citizen to as much calm and repose as he can possibly find in a great city, and it also recognizes that he may and can have grievances against unnecessary nuisances, both public and private. To be sure there are the flat-wheeled car and the old clothes man and the street gamin with his terrifying whistle, but these are noises heard mostly during the day and are in a measure unavoidable in our cosmopolitan life; in any case one can become accustomed to them in time through what the psychologists call a "laudable deafness," or something of the sort. But can one ever become accustomed to the nerve-torturing howls of a cat, to say nothing of a half dozen cats all vociferating at once? Perhaps so, but never as long as his sensorium remains in normal condition. The reporter would enjoy bringing to justice the person who first imported cats in New York city, no matter how praiseworthy his purpose, and it is not difficult to see how Dante would have pictured such a one in the Inferno. One rarely sees mice where cats abound. Perhaps the rodents are frightened away by the soul-piercing mewlings; certainly nobody has ever reported the killing of a mouse by a cat of the New York variety. To sum up, then, there is no reason for the existence of cats in this city, and if it can be proven that they serve any purpose whatever, useful or ornamental, there is still no reason why they should enjoy absolute lack of restraint, day or night, and absolutely no reason for their monopoly in setting in motion waves of unknown amplitude and greater possible vibration.

PHILADELPHIA.

Dr. Faure Entertained.—A reception and luncheon were tendered at the Woman's Hospital, April 8, to Dr. J. L. Faure, a distinguished French surgeon, and Dr. Howard A. Kelly, of Baltimore. Dr. Faure is visiting many institutions of this country in an investigation of American surgical methods. In a short address he spoke very highly of the proficiency of women physicians in this country and deplored the fact that no such opportunities for the study of medicine were afforded the women of France.

Typhoid Record Broken.—During the past week the new cases of typhoid fever numbered 389, the largest number reported in seven days in the history of the city. Deaths were twenty. Health officials are of the opinion that the epidemic has reached its height and will from this time on decline unless new freshets again stir up the Schuylkill. The only remedy offered is to boil the water.

Pasteur Institute Needed.—City Veterinarian Hartman, while discussing the recent large number of bites by dogs, affirmed that one of Philadelphia's most urgent needs is an institute for the treatment of persons who have been bitten by rabid dogs. He asserts that the Pasteur method could be carried out by the Board of Health at comparatively little cost. A hospital is not needed, simply a place for the manufacture and application of the virus.

Individual Communion Cups.—Dr. Howard S. Anders, in an open letter to the *Ledger*, comments very pertinently on the recent action of Bishop Fowler in refusing to administer the memorial of the Lord's Supper at a conference because individual communion cups had been provided. He states that the general principles of cleanliness, sanitary safety and delicate consideration for others are now so generally in use that it is unusual to meet with such petty and untimely objections. Since the inception of the reform "it has won its way, quietly, educationally, more and more widely among the congregations of various churches of the principal denominations, from a mere handful of about a score in 1894 to over 2,000 in the United States alone at the present time. This shows that the innovation has come to stay; that the people are deciding in favor of it; that sensible pastors sanction it; that the authority of bishops cannot retard it. Nearly every week a church somewhere adopts the individual communion cup method of administering the wine for the first time; and no church reverts to the single cup again."

A Case of Galactocele.—A case of this uncommon condition was reported at the Philadelphia Academy of Surgery, April 4, by Dr. W. W. Keen. He stated that he had amputated the breast at least 500 times and had seen from 300 to 500 more cases that did not require operation; among them all this was the only case of galactocele. The patient was a colored woman of twenty-one years who was married at the age of eighteen years. She had had one miscarriage and was later delivered of a full-term child which is now nine months old. She states that she noticed a small lump in her left breast when she was twelve or thirteen years old; this began to increase in size when she was three months pregnant. At the time of operation one-half of the breast was involved. The entire breast was removed, this being considered the proper treatment for such cases. Examination of the specimen showed it to contain one large and many small cysts that were filled with milk of an almost semisolid consistency. Microscopic sections revealed the presence of a conspicuous round-cell infiltration of the mammary tissue that justified the diagnosis of acute non-suppurative interstitial mastitis in addition to that of galactocele.

CHICAGO.

To Wage War on Tuberculosis.—Dr. Geo. W. Webster, President of the Illinois State Board of Health, recently addressed the Progressive Health Club on tuberculosis, and among other things he said: "I have with me a set of statistical tables just completed by the State Board of Health, showing that the number of deaths in Illinois from consumption during the year 1903 was 7,026, while pneumonia claimed nearly as many, 6,830. The greatest source of infection from consumption is through the medium of the sputum, and if the sputum of every consumptive could be destroyed, the disease could be banished from the face of the earth. Experience has shown consumption is a preventable disease, and in 70 per cent. of the cases, a curable one, if taken in time. What is needed in every State in the Union is a sanatorium for the treatment of consumptives. The stamping out of this dread disease is a matter for education and evolution. It depends upon right living, cleanliness, sunlight, temperance, good food, fresh air, and proper care."

Dangers of May Moving.—Physicians in this city during the last three or four years have been investigating a phase of the house-cleaning situation which ought to be more generally understood. It has been discovered in a great number of instances that a thor-

ough cleaning, disturbing, as it does, in many cases the accumulated dust and dormant germs of years, is followed almost immediately by the development of sickness in the family, undoubtedly brought about by the new activity of these germs. Physicians are cautioning their friends at this season of the year, either if they are moving into new apartments or continuing in their old ones, to see that a thorough fumigation of every room goes on, in addition to the cleaning, before the home is occupied. The wisdom of this course, particularly when a family moves into a flat previously occupied by people whose physical condition and surroundings are utterly unknown, is apparent at the first glance. There is a movement now on foot among some of the leading medical men of the city for the preparation of an ordinance that shall make it compulsory on the part of a landlord to thoroughly fumigate a vacated apartment to the satisfaction of the Health Commissioner before it is offered for rent to a new comer.

First Aid Instruction to Employees.—The management of the Pennsylvania System has decided to instruct all the employees of the operating department in rendering first aid to the injured. The plan will soon be put into effect on the lines in the East and West, thereby covering the entire system. The plan is comprehensive, and includes equipping all baggage, mail, express, working and wrecking cars, terminals, yards, offices, shops and important stations with stretchers. The so-called first aid boxes will also be provided in all locomotives, terminals, yard offices, shops and stations. These boxes will contain six sterilized first aid packages. Each package contains one large triangular bandage, one ordinary roller bandage, two compresses and two safety pins. No drugs or liquors will be provided. The boxes will be of wood, and will contain a tin box, in which the materials will be confined. The Pennsylvania is also perfecting plans for the construction of several hospital cars adapted for the transportation of the sick, and to be used in emergency cases.

Establishment of Antitoxin Stations.—Thirty-six diphtheria antitoxin stations have been established in various localities throughout the city, at which physicians may obtain antitoxin free for indigent patients, and at low rates for those able to pay. Culture outfits may also be obtained at these stations.

Resignation of Dr. Kreider.—Dr. Geo. N. Kreider, of Springfield, Ill., Major and Surgeon, assigned to the Fifth Infantry of the Illinois National Guard, has resigned, and Dr. Arthur F. Wilhelmj, of Decatur, has been designated to fill the vacancy on the examining board of the regiment, caused by the resignation of Dr. Kreider.

The Influence of Alcohol, Ether and Chloroform on Natural Immunity in its Relation to Leucocytosis and Phagocytosis.—Dr. Geo. Rubin presented a paper on this subject before the March meeting of the Chicago Pathological Society. He divided his work in three series, namely, alcohol, ether and chloroform. He found that all of these narcotics lower the resistance of rabbits to infection, and that it makes no difference how the narcotic is administered, hypodermically or by inhalation, so that the necessary amount is absorbed to produce complete narcosis. The author found that in the rabbits narcotized and infected, the leucocytosis was considerably lessened, and the animals often succumbed to the infection, while the controls had marked leucocytosis and recovered. In those cases where both rabbits died, the control usually survived his narcotized fellow for a considerable period of time. In certain cases the discrepancies in the leucocyte counts were not sufficient to account for the recovery of the control rabbit and the death of the other. So he reasoned from that, that the narcotics may have an unfavorable effect on the functions of the phagocytes. To test that presumption the author carried out several experiments which were as follows: Two rabbits were injected intraperitoneally with an emulsion of carmine, one having been previously narcotized. He found that a greater number of phagocytes took up carmine granules in the control rabbit than in the one that was narcotized. He also demonstrated a negative chemotaxis between alcohol and the leucocytes. He inserted two capillary tubes, one filled with alcohol, the other with bouillon, under the skin in rabbit's ear; when withdrawn twenty-four hours hence, he found that the bouillon tube was filled with leucocytes, while the alcohol tube was empty. The author gives tables of leucocyte counts made from the blood of 60 drunkards, which show a marked reduction in their number. Differential counts in 25 cases show no deviation from the normal ratio. He found also a considerable difference in the number of leucocytes in the steady and periodical drinker. The latter has more leucocytes than the former. He tries to explain this phenomenon in two ways: (1) That the alcohol may have a detrimental effect on the leucocytogenic centers, so that the tissues in the periodical drunkard have a chance to recuperate between the periods of intoxication, while in the steady drinker, the tissues being constantly under the influence of the alcohol cannot produce the normal number of leucocytes. (2) The negative chemotaxis prevents the white blood corpuscles from entering the circulation in as large numbers where there is alcohol constantly present in the system, while in the periodical drunkard the toxic agent is, at times, entirely eliminated. He draws the following conclusions from his work: (1) That alcohol, ether and chloroform have a decidedly detrimental influence on the natural defence against infection, and that this lowering or suspension of the resisting power of the animal is not due to any organic lesions, since no changes in any of the vital organs were discoverable in any of the animals except such as were caused by the infectious material employed. (2) The influence of the narcotics appear to affect directly the substance or substances which inhibit the growth and toxic action of bacteria in the normal animal; and that these substances are either the leucocytes themselves or something derived from them. (3) The period of detrimental action of the narcotic depends largely on the amount administered, the depth of narcosis, and upon the rapidity of its elimination from the system.

When to Operate and When Not to Operate on the Mastoid Bone.—At the March meeting of the Chicago Laryngological and Climatological Society, Dr. Henry Gradle, in a paper on this subject, said that the operative exposure of the cells within the mastoid process is at present fully recognized as a life-saving operation. The literature of the last decade yields annually reports of some hundreds of cases of intracranial complications and of pyemia or otitic origin. Of these cases, inevitably doomed without operation, a variable, but large, proportion is saved surgically. The review of these reports teaches, first, that suppuration of the middle ear, both acute or chronic, involves danger to life. Secondly, that even in the desperate cases thus reported greater success attends mastoid operations, although many of them must extend into the cranial cavity, and, thirdly, that properly timed surgical intervention would have prevented this serious extension of the disease. But on the other hand, it was known that acute mastoiditis gets well in most instances, and kills in very few without operation. While chronic mastoid disease ends perhaps but rarely in recovery without operation, it can and does remain sta-

tionary and unprogressive in the preponderance of patients. There are no reliable statistics regarding the fatality of suppuration of the middle ear and of the antrum not treated by operation. The figures of clinics are not decisive, because they contain a selection of the graver cases. As far as he can estimate from personal experience and available reports published, the fatality of all otitic suppuration, acute and chronic, is in the neighborhood of one-half per cent. The danger is greatest during the exacerbations of chronic suppurations of the middle ear. The mortality of simple opening of the mastoid process fluctuates in recent reports between four per cent. and nearly zero. The radical mastoid operation is generally attended by about eight per cent. mortality. In the statistics of the Illinois Eye and Ear Infirmary for five years of the work done by all attending surgeons, kindly furnished him by Dr. Pierce, 26 simple operations (opening into the mastoid) resulted in two deaths, while in 126 radical operations there were 12 fatalities. He said the indications for opening the mastoid for acute disease can be best defined on the basis of a brief review of the various modes of termination of acute mastoiditis. In at least one-third of all instances acute mastoiditis subsides gradually after a climax of three or four days, provided there is free drainage from the middle ear.

Operative Indications.—(1) The least suspicion of intracranial extension based on persistent one-sided headache or on any cerebral symptoms gives an immediate vital indication. (2) Whenever a perforation threatens, this should be anticipated by operation, and if it has opened spontaneously, through a narrow fistula, the danger of pus under tension should be obviated by better drainage. Perforation is inevitable whenever the posterior wall of the meatus of the ear begins to sag, whenever the soft tissues behind the ear show inflammatory infiltration (not merely a pale edema), or when infiltration begins around and beneath the tip of the mastoid. (3) When the characteristic signs of mastoiditis, namely, pain and tenderness, continue to increase after the third day, or even increase rapidly after the second day, immediate operation is the safest course. (4) When the discharge of acute otitis with mastoid symptoms does not diminish at all in the course of about two weeks of appropriate treatment, chronicity must be expected, even though the mastoid signs diminish. Hence, an operation is now proper. (5) If the mastoid pain and tenderness begin to diminish after two or three days of climax, the operation may be deferred. Those cases in which the mastoid symptoms remain stationary after the first two or three days belong to the debatable class in which it is difficult to say whether to operate or to wait. If mastoiditis follows otitis, the discharge of which has ceased, the need of operation is greater than when there is still discharge from the middle ear. Streptococcus infection means greater danger and more need of operation than the presence of the pneumococcus or staphylococcus in the pus of the middle ear. In cases of doubt an unnecessary operation may be safer than any unreasonable delay. In all acute cases the only operation to be considered is the opening of the mastoid. The radical operation is entirely uncalled-for and improper. In chronic disease of the middle ear and mastoid, the operative indications are to be regarded from a different point of view from those in acute cases. A simple opening of the mastoid antrum, although often curative, is generally not the proper operation. In most cases a cure is obtained quicker and with greater certainty by the radical operation, which converts the antrum, the attic and the middle ear proper into one continuous and accessible space with exenteration of contents. Perhaps the most convenient way of defining the operative indications in chronic disease of the middle ear is to eliminate those cases which do not require operation. It is not proper to resort to operation in the absence of any urgent symptom, until a thorough trial has been given to non-operative treatment. Only after chronic otitic suppuration without urgent symptoms has resisted all conservative methods or has relaxed repeatedly in spite of apparent cure, should the radical operation be considered. If, after such treatment has been properly tested for a sufficient length of time, there remains a discharge free from odor, danger to the patient is not greater and probably less from the disease than from the radical operation. If, however, the discharge remains fetid in odor, experience shows that the danger from the disease is as great, if not greater, than from the operation, while the latter offers at least complete exemption from future danger, if not the certainty of a cure. Hence, under these conditions and in the absence of threatening symptoms, the question whether to operate or not must be decided by the patient himself, or at least by his circumstances. A prompt radical operation is the only safe course in all instances in which irritative symptoms indicate active extension of the disease. This immediate indication is given in all chronic instances of otitic suppuration by persistent dizziness, pain or local tenderness, one-sided headache, or any symptoms suspicious of intracranial involvement.

GENERAL.

Vital Statistics on the Stage.—Ludovic Barnay, the famous Hungarian actor who once delighted New York theatre-goers nearly two decades ago in "Julius Cæsar," says that he has played 3,868 times in 98 cities. He has appeared in 371 pieces and assumed 455 rôles. On the stage he has been married 1,721 times and died 1,120 times. "I was stabbed," he says in his memoirs, "61 times, killed by lightning 51 times, drowned 22 times, poisoned 166 times, beaten to death 86 times, died of heart disease 192 times, assassinated 109 and executed 133 times. Finally I committed suicide 314 and died a natural death 55 times." All of which shows that the pabulum of dramatic material is chiefly composed of murder, lust, violence and other beatific passions. Fancy a drama purged of this element and dealing with angel cake and sermons and you would have the drama of those who wish to deodorize their neighbors and fail to comply with board of health rules in their own back yard.

Gift for Yale Medical School.—The legacies of the late Mrs. Henry Farnam to Yale have been somewhat incorrectly reported. About $52,500 will go to the endowment fund of the Medical School, and about $30,000 to the endowment fund of the university library, the income to be used in the purchase of books. These additions raise the total funds of the Medical School to about $161,000 and of the library to about $360,000. Mrs. Farnam had been a steady and generous giver to various branches of the university, and her gifts enumerated during the last ten years in the treasurer's report amount to more than $20,000.

A Useful Departure.—Henry Phipps, of the United States Steel Corporation, has offered to the Prison Board of the Western Penitentiary a large floral conservatory for the penitentiary, provided the prisoners be permitted to visit the greenhouse. The prison board has accepted the offer. Plans are being made for a large conservatory of concrete, slate, steel and glass to be erected adjoining the prison. The greenhouse will be so arranged that when the

prisoners are not visiting the place it can be thrown open to the public.

The Medical Profession.—In a recent article in the *Medical Library and Historical Journal*, Dr. J. P. Warbasse, of Brooklyn, with other excellent thoughts writes as follows: Hand in hand with the march of civilization have gone the advancements in medicine. To-day the practitioner in medicine lives closest to the lives of the people. No other vocation brings men so close to the home. The clergyman knows people at their best; the lawyer knows them at their worst; the doctor knows them as they are. And yet the doctor is the most misunderstood of men. He strives to inhibit the very conditions from which he gains his livelihood. He conducts societies for the preservation of the public health; he strives for the prevention of diseases; he works to perfect means for shortening the duration of diseases; and, finally, he disseminates his knowledge of these things to all lands. He gives his knowledge to all the world and claims no proprietorship in anything which his colleague may use for the benefit of humanity. He patents nothing. Medical societies have opened their libraries to the public, from which the layman may learn to take care of his health and his family's. The physicians of the world are united into local societies, into national organizations, and finally into international congresses which meet and cooperate for these ends. No reputable physician has any medical information which his brother physician may not have freely for the asking. Are the lawyers of the world banded together to disseminate knowledge for the prevention of litigation? Have the tailors united in an effort to secure greater permanence in styles? Did Sheffield invite Pittsburg to a conference to teach her the secrets of steel? No: these are businesses. The layman is engaged in business and cannot understand these things.

The physician is misunderstood by the lawyer because, on account of these very things, the lawyer looks upon him as a poor business man. The public does not see that philanthropy has any place in business. None but a doctor can judge a doctor. The layman's judgment as to who is the most capable physician is apt to be wrong, for the reason that he measures by standards which we do not recognize. If the layman were wise he would employ a physician to advise him whom to employ to treat him.

As civilization and the mental development of the race have their erratic deviations, so are there kindred erratic exhibitions of medicine. As there are Anarchists and Dowieites, Socialists and Spiritualists, so are there Eddyites and Homeopaths, Osteopaths and Healers. These are not backward steps; they are the products of a higher civilization. The time is not yet when the truth shall reign supreme and alone. There are the lie and the imposition and the bombastic pretense to peck at its heels and pick at the hem of its garment. These come and go. History has witnessed the beginning and the end of thousands of them. They are fungi that have their origin from things of virile life, but they have not the capacity to endure.

While these fads and sects seem to interfere with the progress of medicine, the contrary is really the case. Medicine takes from them the thing that has made them live, and eventually appropriates it to herself. It may be laid down as an axiom that anything which has the power of developing a sect or following must have something good in it. Medicine is an art, because it appropriates the best wherever it can find it and calls it its own. Its mission is to make the human body more enduring and beautiful, to surround it with wholesomeness, to make the senses more perfect and the hand more cunning; and that is a mission which must needs make for the uplifting of the spirit.

Because the physician is engaged in these things, he too is made better. He is uplifted by his own efforts to help others. He shares in the civilizing effect of his own work.

OBITUARY.

Dr. Philip Bissell died from pneumonia last week at the New York Hospital, where he had just completed his interneship. He was born in Rochester, N. Y., twenty-seven years ago and was a son of Willard Bissell, a merchant of that city. He was a graduate of Columbia University, and was a student of marked ability. Dr. Bissel is the fifth or sixth young physician of unusual promise to succumb in the opening year of their career in New York this past year.

Dr. Crawford K. Fritts, the leading physician of Hudson, N. Y., died last week. He had an attack of neuralgia of the heart, and despite heroic methods pursued by his attending physicians, he failed to recover. He was in his fifty-fourth year.

CORRESPONDENCE.

THE TOXICITY OF THE SAPONINS.

To the Editor of the Medical News:

Dear Sir: Out of hand it would be difficult to establish a relationship between hemolysis and the soda water fountain, but in a recent and interesting monograph (Beiträge zur Kenntniss der Saponinsubstanzen, R. Kobert, Verlag Enke, Stuttgart, 1904) this has been very clearly shown.

This monograph embodies the results of the work of Kobert and his pupils on the derivatives of the Saponaria and allied families, which results have been published in the reports of the pharmacological institutes at Dorpat and at Rostock. The work has been in progress since 1883.

Kobert's attention was called to these substances through several remarkable properties. Owing to their toxicity they have been used since the time of Aristotle and perhaps by the Phoenicians to catch fish. Extracts of plants containing these substances when placed in water kill fish with great rapidity.

They have the property in solution of keeping solids and immiscible liquids in suspension for an almost indefinite period, and as such have been used in pharmacy for preparing emulsions.

As their name implies they fulfil the function of a soap. Their solutions have been used in domestic and technical practice for washing fabrics which will not withstand the action of soaps. They also produce a lasting foam similar to that formed by soaps and have been used in beverages to effect the foaming so much desired in soda waters and allied drinks.

Certain members of the family, notably the sarsaparillas have obtained much renown in popular practice as antisyphilitics. Lastly and very importantly, they have a marked hemolytic action and, when introduced into the circulation, are exceedingly toxic to all classes of animals. It is to this last property that Kobert especially calls attention.

The hemolytic action of the different members of the group varies within wide limits. Whereas, the sarasaponin obtained from sarsaparilla induces hemolysis in solutions of 1-125,000, the guaiac saponic acid from

guaiac wood requires a concentration of 1-10 to effect laking of the corpuscles.

Two other important members of the group stand midway. These are *quillaya* sapotoxin which is in common use for foam making purposes and which has a hemolytic action 1-10,000 and *chamælirium* 1-700. This latter is the substance which Kobert provisionally suggests to replace the quillaya bark. By means of chemical reactions which are more or less difficult to effect on a commercial scale it is possible to reduce the hemolytic power of the saponins. Unfortunately this loss in toxicity is accompanied by loss in foaming and the changed saponins are useless for commercial purposes.

The toxic effect of these substances on the organism varies according to the animal used, the manner of introduction, and the specific saponin employed.

A certain relation does exist between the hemolytic power of the saponins and their toxic property, but this relationship is not a simple one. In non-lethal doses the hemolysis occurring in the blood does not always produce a hemoglobinuria. Larger doses do, however, produce a marked hemoglobinuria leading to a fatal issue. The lethal dose of these substances is small in every case. For quillayic acid and sapotoxin the amount is one milligram per kilo, and even less. For fish one part in 300,000 of water is lethal. On the other hand, it is well known that doses of 0.1 to 1.0 gram per os have been taken by individuals with intact gastric and intestinal mucosæ without ill effect.

In suitable cases, however, the ingestion of doses under 0.1 gram gives rise to a highly dangerous condition leading to inflammation and hemorrhage. Kobert is, however, not prepared to say that the hemolysis is the simple cause of death, but believes also that the saponins affect the nervous system.

It is directly in this connection that the work of Kobert is of interest to the clinician. In the treatment of alcoholic inflammations and in inflammatory conditions of the digestive tract it is the custom to allow the use of artificial lemonades and non-alcoholic drinks. It is quite possible under these circumstances to permit the ingestion of as much of the active principle of these foam-creating substances as 0.1 to 1.0 grams per day. It can well be understood that this may cause inflammatory symptoms, the etiology of which may remain dark for some time.

Moreover, in the summer when large quantities of soft drinks are consumed, with at the same time an increased tendency to intestinal inflammation, the use of beverages containing the saponins is doubly contraindicated.

Kobert suggests that in the manufacture of emulsions and non-alcoholic drinks the use of saponins, especially quillaya bark be absolutely prohibited.

As a substitute he proposes either chamælirin, or better, the saponin obtained from guaiac. Other questions such as immunity against these substances, the specific action of cholesterin and the lecithins, which are more of interest to the biologist are taken up.

C. G. L. Wolf,
Cornell University Medical College.

New York, April 2, 1904.

ANAESTHOL.

To the Editor of The Medical News:

Dear Sir: We beg to state that the use of the name of Dr. Willy Meyer, of New York, upon the label of the new anesthetic "Anaesthol" was introduced without his knowledge, though in entire good faith upon our part.

At his request the label has been changed and, in order to protect the medical profession against unreliable imitations, it will henceforth bear the name of Dr. Weidig, the originator of the new compound.

Chas. Cooper & Co.,
194 Worth St., New York,
Sole Manufacturers.
Lehn & Fink,
120 William St., New York,
Sole Selling Agents.

March 29, 1904.

SPECIAL ARTICLE.

THE MUTUAL RELATIONS BETWEEN TOXIN AND ANTITOXIN.*†

BY PROFESSOR PAUL EHRLICH, M.D., LL.D.,
OF FRANKFORT-A.-M., GERMANY.

INTRODUCTION.

The importance of practical and theoretical study of immunity. Influence of the side-chain theory. Cellular origin of antibodies. Relations between the constitution and distribution of chemical substances and their pharmacological action. Complexity of simple functions.

Opposing views. Criticism of their experimental basis eliminates errors and reverses their significance. Importance of hypothesis to scientific advancement. Heuristic value of theory of immunity. Utility of succinct nomenclature and symbolic representation (algebra, chemistry).

HISTORY OF SIDE-CHAIN THEORY.

Studies upon the localization of various dyes and their relations to cellular chemistry (Methylene-blue, Neutral-red). Production of immunity with poisonous proteids; —independently of Behring (ricin, abrin, robin). Immunity not only bacterial, but a general principle. Quantitative studies on augmenting immunity and determining its degree. Older obscure conceptions of the relations between antitoxin and toxin (union, destruction, cell-protection). Experiments in vitro eliminate obscurities of those on animals. Chemical nature of union demonstrated. Warmth and concentration hasten union.

TOXOIDS.

Difficulty in applying purely chemical conceptions in the case of diphtheria toxin. Law of equivalence apparently violated. Definitions of immune unit; technical toxin-values, lethal dose ("Dosis lethalis"), limit zero ("Limes null"=Lo.), limit death ("Limes Tod"=L†). Different lots of diphtheria toxin though neutralized by a single immune unit contain different numbers of lethal doses. Investigation shows that upon standing the diphtheria toxin loses toxicity, but retains undiminished its affinity for antitoxin. The toxin molecule is quantitatively transformed into non-poisonous toxoid. Chemical illustration (anilin and sulphanilic acid). The simplest explanation of toxoid formation rests upon the assumption that the toxin-complex contains two groups of different functions: (*a*) Haptophores, by which the complex enters into chemical unions; (*b*) Toxophores, which occasion toxic action. Behring's objection, exemplified in hydrocyanic acid, not justified, because of the simple constitution of that poison. Complex organic compounds have repeatedly been shown to contain groups which confer definite properties upon the whole molecule. Anesthesiophore function of the benzoyl group in cocaine; functions of the chromophore and auxochrome groups in dyes; color reactions of proteids due to definite groups (tyrosin, tryptophan, etc.). Evidence of this complex

* Abstract of the first Herter Lecture, delivered before Johns Hopkins Hospital Medical School, April 12, 1904.

† This paper will be published in full in a subsequent issue of the Medical News.

character of toxins also furnished by studies of hemolysins and bacteriolysins, which have their origin in the union of an amboceptor and complement and are analogous to toxins, the amboceptor representing the haptophore and the complement the toxophore group. Kyes' studies on cobra-lecithid.

SIDE-CHAIN THEORY.

Haptophore Group.—The conception of the duplex nature of toxins, etc., forms the basis of the side-chain theory. Views regarding protoplasm. Fundamental nucleus and side-chains (receptors). These receptors subserve normal assimilative processes which are of synthetic character. Only those substances can be chemically incorporated with the protoplasm (assimilated), which possess a grouping most closely related to some constituent of the cell, fitting into its constitution as a key into a lock. The toxins represent, to a certain extent, toxic foodstuffs. It is mere chance whether they encounter suitable receptors in the cells of a particular animal species or not, as is shown by the irregularity in the action of given toxins in the animal kingdom (botulism). Elaboration of the side-chain theory. The antitoxins are receptors, produced in excess, and liberated from the cells. Appearing in the fluids they unite with the toxins for which they have specific affinity and thus protect the cells which have receptors of similar affinity from damage (analogy to lightning-rods). Not only toxins, but also toxoids, call forth antibodies. It is therefore chiefly the haptophore group which causes the cell-reaction, yielding antibodies by occupying the specific receptors. It is doubtful whether this cell reaction is purely regenerative. The great disproportion between the amount of toxin introduced and the quantity of antibodies obtained points to a concomitant cell-stimulation (Bindungsreiz of Wassermann). This is supported by the fact that a single immunization with suitable bacteria (*e.g.*, cholera) or toxin (*e.g.*, that of diphtheria) may induce an abundant production of antibodies.

EVIDENCE IN FAVOR OF THESE THEORETICAL CONCEPTIONS.

1. The demonstration of specific receptors in organs susceptible to a particular poison. Wassermann's experiments: union of tetanotoxin with cerebral tissues. Disproof of opposing views of Behring and Besredka. Locking of native and experimental hemolysins by susceptible erythrocytes.

2. The demonstration by Pfeiffer that during the latent period, before free antibodies appear in the serum, they may be obtained from the bone-marrow with salt solution (loosely bound, partially liberated receptors).

3. Demonstration of the presence of receptors produced and fixed in definitely localized tissues. Increased abrin-locking by the immunized conjunctiva (Römer).

4. Local production of specific precipitins for maja-albumin after intraocular injection (v. Dungern).

5. All attempts to produce antibodies with alkaloids, antipyretics and antiseptics have failed. These substances do not enter into the composition of the protoplasm, they encounter no suitable receptors and therefore fail to call forth a specific antigenetic reaction.

TOXOPHORE GROUP.

The toxophore group need not necessarily be simple but may comprise various constituent groups which may be identical or different. Illustrations from alkaloidal chemistry; strychnine contains two oxygenated radicles both of which produce convulsions and the drug owes its extraordinary toxicity to a combination of the two. Substances of the filicic acid series are active in proportion to the number of filicic butanon groups they contain. Ricin probably contains two toxophore groups, one agglutinating erythrocytes, the other causing its general toxicity. Three varieties of toxoids may be obtained from ricin, one non-toxic but agglutinating, one toxic but not agglutinating; both of these are incomplete toxoids. The third, complete, is neither toxic nor agglutinating (Tarobi). Tetanotoxin and diphtheria toxin also appear to contain various toxophore groups. In the former there may be a lethal toxophore group and a morbific group; and in the case of diphtheria we may have to distinguish between complexes which cause the chronic effects and those occasioning acute manifestations. It is possible that certain partial groups act more powerfully on certain animal species than on others, and this may explain the observations emphasized by Behring that modified toxins meet with a range of susceptibility in the animal kingdom different from that of the original, unmodified toxin. Of practical importance is the question whether for the rapid production of antitoxin it is more advantageous to use only toxoids, or whether the presence of partial components of the toxophore groups exerts a more favorable cell-irritation.

The action of the toxophore groups is generally slow. Since the intravenous injection of toxins is rapidly followed by their locking in the tissues and disappearance from the blood, the incubation-period, which in the case of diphtheria *toxones* may last for weeks, can only be explained by the slow action of the toxophore complexes. This is further exemplified in the hemolysins. Other factors may enter into the production of a period of incubation (studies of Hans Meyer and of Roux on tetanus). It is difficult to express definite views regarding the mode of action of the toxophore groups. Hueppe's hypothesis; experimental evidence wanting.

RECEPTORS. SUSCEPTIBILITY TO TOXINS. RELATIONS TO METABOLISM.

The receptors of the cells are constituents of the protoplasm possessing a certain independent individuality, as is shown by the possibility of causing their augmented reproduction. In respect to the toxins they act as localizers or condensers and may from an infinitely dilute solution occasion a concentration of toxins in particular cells similar to the concentration of picric acid which takes place when wool is immersed in a dilute solution. Susceptibility to toxins may be divided into the following varieties:—

1. Great susceptibility. Toxophilic receptors exclusively in vital organs. Antitoxin production very difficult because of damage to cells, only possible through use of toxoids (guinea pig or mouse and tetanus).

2. Slight susceptibility because of wide distribution of toxophilic receptors in indifferent tissues, *e.g.*, connective tissue, which lock the greater part of the toxins, and thereby protect more important tissues (fowl or rabbit and tetanotoxin).

3. Insusceptibility, though toxophilic receptors be present, because toxophore groups do not act on protoplasm. Abundant production of antibodies. Rare condition (crocodile and tetanotoxin).

4. Insusceptibility through lack of toxophilic receptors. Numerous examples clearly established (crotin, arachnin, specific hemolysins).

Definite receptor-complexes are associated with definite forms of metabolism. Uniform metabolic processes imply uniform receptor-complexes and therefore a uniform susceptibility to toxins (diphtheria toxins and guinea-pigs; tetanotoxin and mice). Individually varying functions reveal themselves in extraordinarily variable susceptibility (*e.g.*, crotin and rabbits). The embryonic erythrocytes of chicks possess no receptors for arachnolysin and are therefore not destroyed by this toxin. Immediately after hatching the development of susceptible erythrocytes begins.

The study of the receptors has been of particular im-

portance in elucidating the processes of assimilation. Former methods applied to damaged cells were not sufficiently refined. Isolated receptors obtained by immunization make an accurate study of assimilation and katabolism more approachable. The reproach brought forward by some controversialists that the theory of receptors should also explain regeneration is extravagant. It is an advance to be able to isolate certain wheels in the complex mechanism of the assimilation-processes and to ascertain their utility. The actual motive power is not revealed and the problem of regeneration of living matter will long remain unsolved.

The demonstration that erythrocytes possess extraordinarily numerous and various receptors is particularly important. It indicates that these corpuscles, in addition to their function as oxygen-carriers, play an important rôle in metabolism in storing intermediary bodies.

Investigation has been greatly aided by a knowledge of the receptors, since they can be used in the analysis of animal and vegetable poisons to separate them into partial-toxins having different haptophore groups. Thus it is possible by specific locking with specific antibodies to analyze snake poison into neurotoxic, endotheliotoxic and two hemotoxic components. Of the latter, one agglutinates, and the other, through the formation of lecithid, hemolyze the blood (Meyer, Flexner, Kyes). Similar analyses of tetanotoxin and diphtheria toxin are possible. The method is a great advance in a most difficult field of research.

CONCLUSION AND PRACTICAL FORECAST.

The immunization industry which has for its aim the production of sera of highest potency has made marked progress. Sera of much higher antitoxic value than have hitherto been obtained will be the result. The knowledge that the immunity reaction is reduced by too highly toxic treatment of the animals is spreading. An effort is being made to restrict this immune reaction to tissues of slight vital importance (connective tissue) and to protect vital organs from injury. In this direction are the methods of immunization with toxin and antitoxin injected separately or after admixture. Thus an apparently neutralized toxin may cause antitoxin production (Park). This is due, as will be explained in the next lecture, to the presense of ultra-toxoids.

Progress in the production of curative sera is to be expected only when it becomes possible to obtain antitoxins of greater avidity than those now procured. That this is theoretically possible is shown by the investigations of Kyes who demonstrated that through the immunization of rabbits with cobra-lecithid it is possible to obtain an antibody of considerably higher avidity than that obtained by Calmette with cobra venom in horses (antivenin). The selection of particularly favorable animal species and the use of toxins of least avidity or ultra-toxones will, most probably, bring this problem much nearer its final solution.

Origin of Fat in Lipemia.—Perhaps the highest amount of fat in the blood on record was found in a case of diabetes by E. NEISSER and L. DERLIN (Zeitsch. f. klin. Med., Vol. 51, Nos. 5 and 6). The blood obtained by venesection was chocolate colored and contained almost 20 per cent.; the urine almost one per cent. and the heart-blood after death 24 per cent. A chemical examination was made of the fat in order to decide its origin; it differed considerably from the fat stored in the organ but closely resembled the fat of the chyle, hence was probably derived from the ingested food.

SOCIETY PROCEEDINGS.

THE AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS.

Fourth Annual Meeting, held in New York City, April 1 and 2, 1904.

(Continued from Page 718.)

Influence of Salts on Lytic Serum.—Dr. Ludvig Hektoen, of Chicago, in a paper on the influence of salts on lytic serum, said that normal salt solution has always been used in making the necessary dilutions in experimenting with lysins of various kinds and no objection is raised to its use, but by using the same strength of other salts in solution, some of them might be found to modify the activities of lysins, and Dr. Gustav F. Roediger and himself have shown that chlorides of calcium, barium, strontium, magnesium and the sulphates of magnesium and potassium suspend hemolysis by their action on the complement under certain conditions and that they suspend the bacteriolytic effect of human serum upon typhoid bacilli. Manwaring, he said, has shown that certain salts inhibit the lytic action of goat's serum on dog corpuscles, the amount of the salt necessary varying with the amount of the complement in the serum; and that precipitation of the salts from non-hemolytic serum salt mixtures restores the original hemolytic power which may be destroyed by heat, and concludes that perhaps the antilytic action of the salts is due to the formation of simple salt or ion complement compounds that are hemolytically active. Dr. Hektoen presented tabulated results of further observation of the action of other salts on the lytic substances in a variety of sera. Small quantities of many salts, he said, are capable of inhibiting the lytic action of human serum upon typhoid bacilli and dysentery bacilli. With the exception of $MgSO_4$, alkaline earths are most active in producing this result. He found also that some salts are germicidal when used alone, while a mixture of solutions of them with serum forms a good culture medium for the bacteria. Many salts were used which had no marked effect on bacteriolysis. The addition of these salts to the sera inhibits the bacteriolytic action, but does not destroy that property of the serum. Example: A mixture of $SrCl_2$ and serum is a good culture medium for typhoid bacilli, but if $Na_2C_2O_4$ is added to precipitate the strontium salt, the serum again becomes bactericidal. This is true also of strong solutions of sodium chloride. The same solutions that suspend hemolysis suspend bacteriolysis as a rule, so, he said that there is reason to believe that the complement is the point of attack. Dr. Hektoen does not believe with Behring that the bactericidal action of rats' serum on anthrax bacilli is due to alkalinity, but that it depends upon interaction of amboceptor and complement. Attempts to inhibit bacteriolysis by serum by introducing the salts into animals have proved unsatisfactory as yet, owing to the death of the animals due to the immediate action of the salts. Tables showing the results of large numbers of salts upon the sera of various animals showing antibacteriolytic action were presented. He quoted Kyes as having shown that the hemolytic amboceptor of cobra venom is activated by lecithin, with which the amboceptor may form a crystallizable chemical compound. Cobra venom is also activated by constituents of normal serum, but according to Kyes and Sachs, the complement in guinea-pig serum, which activates cobra venom hemolytically, is different and

distinct from lecithin. Series of tabulated results of experiments by Dr. Hektoen supported these conclusions. Human serum was shown to become antibactericidal by the action of disintegrated typhoid bacilli, and the products of autolysis of typhoid bacilli were shown to have antilytic properties due to the effect upon the complement and soluble products of autolysis of typhoid bacilli to hinder bacteriolysis. These experiments showed, he said, that in typhoid infections not only is the complement used up in the course of the bacteriolysis, but that a certain amount is also neutralized by the soluble products of disintegration of typhoid bacilli. Tabulated results of further experiments showed that decreasing amounts of antilytic solutions give increasing lysis with the same quantity of complement or serum, that increasing quantities of complements give increasing lysis with the same amount of salt solution, and finally, that multiple proportions of the amount of complement and salt in a given mixture maintain about the same lytic value. His experiments show that in certain instances an excess of salt solution above that necessary to prevent hemolysis causes laking of some corpuscles. There is strong probability, he said, of great similarity of nature and structure of various complements in various sera and in the same serum, and there are indications of close relationship in the chemicophysical nature of complements. Dr. Hektoen concluded that in small doses of $\frac{M}{8}$ solutions, many salts prevent lysis in red corpuscles and of bacteria by various sera. The same salts inhibit the activation of cobra venom by guinea-pig serum. The soluble substances of disintegrated typhoid bacilli have antibacteriolytic and antihemolytic properties. The antilytic salts experimented with prevent hemolysis and probably bacteriolysis by virtue of their complements; that probably in their actions complements and antilytic salt solutions follow simple physicochemical laws and are closely related in their chemicophysical properties; that amboceptors appear to be unaffected by antilytic salts in quantities sufficient to neutralize the complements and possibly neutralization of complements may play an important rôle in certain infections.

Concerning the Specificity of the Somatic Cytotoxins.—Dr. Richard M. Pearce, of Albany, said an attempt to demonstrate the relative specificity of the various cystolysins produced in the rabbit, by injecting the various cells and fluids of the dog, sera produced by injection of the liver, pancreas, adrenal and kidney free of blood and serum have a distinct hemagglutinative and hemolytic action. The same is true of the sera of animals receiving normal serum and urine. Animals treated with bile develop a serum which is agglutinative but not hemolytic. The nephrotoxic serum has a distinct action on the kidneys; pancreas, hepatic and adrenal sera have no definite action upon the organs for which such is supposed to be specific. Degenerative lesions of the kidney and occasionally of the liver follows the administration of all the sera. Albuminuria was frequently observed. When the organ with the contained blood is used for purposes of injection, the action of the resulting serum is complicated by the hemolysins present and unless this factor is recognized incorrect conclusions may be drawn. Such sera cause hemoglobinemia, hemoglobinuria with, usually, lesions of the liver or other organs due to agglutinated red blood corpuscle thrombi. It is evident, Dr. Pearce said, therefore, that specificity depends upon the clinical (receptor) constitution of the cells and not upon morphological characteristics —a confusion of the virus of Ehrlich and Morgenroth. Many of the results heretofore deduced as due to cytotoxin specific for the cells of various parenchymatous organs are due, instead, to hemoglutinins or hemolysins.

Parasitic Hemoptysis.—Dr. E. R. LeCount, of Chicago, reported a case which had occurred in the practice of Dr. A. D. Mackenzie, of Portland, Oregon, and demonstrated the ova of the *Distoma Westermanni* which he had found in the sputum of the patient. This, Dr. LeCount said, was the first case of hemoptysis of parasitic origin observed in this country. The patient, a native of Japan, presented symptoms and physical signs, other than his hemorrhage from the lungs, which, for a time resembled those of pneumonia. Repeated examinations had been made also for the tubercle bacilli, with negative results. The ova were first found by Dr. Mackenzie and later by Dr. C. W. Styles, of the Bureau of Animal Industry. Dr. LeCount reviewed previous observations in this country of pulmonary infection with animal parasites in the hog, the cat and the dog. He said that the disease is endemic in Japan and that most of the literature on the subject is in the language of that country, that two forms of disease due to the *Distoma Westermanni* are known to occur, the pulmonary and the cerebral in both of which cysts are found. A single worm has been found, usually, in a cyst in the lung and a bronchiole always leads into a cyst. A mucopurulent or hemorrhagic exudation is usually present. In the cerebral form adult worms and ova have been found in the cysts. Dr. LeCount further said that Taniguchi believed that the walls of the cysts were in part formed by the vessels, when embolism occurred in this disease. Ova have been found also in various other parts of the body and in the intestinal contents. According to Katsurada, the average size of the ova was 93.5μ in length and 57μ in breadth. In Mackenzie's case they were 91.33μ by 55.18μ.

Avian Tuberculosis.—Dr. Veranus A. Moore, of Ithaca, described and illustrated by lantern slides the morbid anatomy and etiology of tuberculosis in fowls. The lesions, he said, are largely found in the liver, spleen, intestines and mesentery, the other organs being rarely found diseased. The tubercle bacilli were found in large numbers in the lesions and pure cultures were obtained. The cultural characteristics were briefly described and Dr. Moore said that the morphology of the organism was found to vary much when grown on different media, being smaller and more uniform in size on blood serum and in Dorset's egg medium longer and containing more granular and involution forms when grown on glycerin bouillon and potato. Fowls inoculated with the pure culture developed generalized tuberculosis, but rabbits and guinea-pigs were not affected by abdominal inoculations. A number of fowls were inoculated with human and bovine tubercle material and others were fed with tuberculous sputum with negative results after four or five months. The difficulty of making a differential diagnosis in living fowls was emphasized. Tuberculin made from human and that made from avian tubercle bacilli had thus far not been successful.

Glioma over the Coccyx.—Dr. F. B. Mallory, of Boston, reported the further history of a case previously presented by him to the meeting of the society in Cleveland, in 1902. The tumor occurred in a woman forty-four years old. It had been noticed

twenty-five years previously, when it was about the size of a hickory-nut. It remained of this size until one year before operation, when it grew rapidly, and reached the size of a baseball. It was not attached to the coccyx and the skin was freely movable over it. A year later metastatic nodules were removed from the right groin. In 1904 she was again operated on and recurrences over the coccyx and in the right groin, and metastases in the left groin were removed. The original tumor, the metastases and the recurrences agreed in gross and microscopic appearances. Each tumor mass consisted of nodules distinctly encapsulated. On section they appeared gray and homogeneous like a sarcoma. There were a few areas of necrosis and of hemorrhage. Under the microscope the structure was that of a carcinoma, namely masses of epitheloid cells embedded in a connective tissue stroma. The peculiarity, however, was that the epitheloid cells in the alveoli had produced a fibrillar intercellular substance which has the chemical reactions of neuroglia fibers. So far as known this is the first case on record of a glioma outside of the central nervous system, or of metastases from a glioma. The type of the neuroglia cells is like that seen in early embryonic life. It is probable that the tumor arose from embryonic remains of the neural canal over the coccyx.

The Blood of Normal Guinea-pigs.—Dr. S. H. Burnett, of Ithaca, said that he had made a careful study of this subject and that in the circulating blood of full-grown, supposedly normal guinea-pigs the red blood corpuscles were found to average 5,276,000 per c.mm. The average percentage of hemoglobin was 94.5. The specific gravity found was 1.053. The average number of leucocytes was 10,897 per c.mm. and that five varieties of leucocytes were found in the peripheral blood, as follows: Lymphocytes cells in which the nucleus occupies nearly all of the cell body of which is strongly basophile and coarsely reticular and was equal in size to the red blood corpuscle or twice its size. The average number per c.mm. is 5.087 or 47.32 per cent. Large mononuclear cells with oval or variously bent and curved nuclei which occupy relatively less of the cell than those of the lymphocyte. The cell body of this variety is faintly basophile and finely reticular. Many of these cells contain one or more vacuales or a rounded body which is often nearly as large as the nucleus. The size of these cells is about twice that of the red blood cell and the average number per c.mm. is 1,090 or 10.05 per cent. Polynuclear cells with polymorphous nuclei, the cell bodies of which contain a moderate number of fine granules which have a weak affinity for acid dyes and are one-half the size of the red cell. Average number per c.mm. 3,257 or 31.52 per cent. Eosinophile cells with polymorphous nuclei usually bilobed the bodies of which contain many coarse circular acidophile granules and are slightly larger than the polynuclear variety. Average number per c.mm. 1,175 or 10.72 per cent. Most cells with polymorphous nuclei and cell bodies containing many strongly basophile granules which are slightly larger than the cosinophile granules. These are slightly larger than the eosinophiles and average 43 per c.mm. or 0.37 per cent.

Varieties of Bacilli Included in the Dysentery Group. Dr. Wm. H. Park, of New York, said that last summer, when this study was undertaken, it had already been shown by Kruse, Hiss, Martin, Lentz, Collins, himself and others that the bacilli obtained from cases of dysentery differed among themselves in their biochemical and agglutinative characteristics. The object of his investigation, he said, was to see whether all the bacilli belonged to a few distinct types or had endless variations. It can be stated that 90 per cent. of all the cases are due to one or the other of these distinct types, and that most of the remaining ten per cent. of bacilli are very closely allied to one of these types. The variety which was met with in the most characteristic epidemics was usually the Shiga type, which does not produce reddening of the peptone mannite litmus media. The second type actively ferments mannite and maltose in peptone mannite media and produces indol. To this type belong the bacillus isolated by Flexner in Manila in 1900, and that from summer diarrhea in Baltimore, by Duval, in 1902. He obtained this bacillus during the past summer from epidemics at Orange, N. J., Riker's Island and New York City. The third type ferments mannite but not in appreciable degree maltose in pepton media. It also produces indol. This type was first isolated by Dr. Park in Dr. Dunham's laboratory at Seal Harbor, Maine, in the summer of 1902. In the fall of that year it was isolated from cases in the Children's Hospital in New York City by Hiss, Wollstein and Collins. During the past summer it was the most frequently isolated type in New York City and in small epidemics north of the city in Mount Vernon, Tuckahoe, etc.

Dr. Park showed the following table giving the reaction of the members of each type to the serum produced through bacilli of the same type and of the other types:

Serum of animal immunized to

Source of Culture	Shiga Type 1-100	Shiga Type 1-1000	Manila Type 1:100	Manila Type 1:1000	Seal Harbor Type 1-100	Seal Harbor Type 1-1000
Type 1.						
Japan (Shiga)	++	++	—	—	—	—
New Haven (Duval)	++	++	—	—	—	—
Mt. Vernon (Collins)	++	++	—	—	—	—
Type 2.						
Manila (Flexner)	—	—	++	++	+	—
Baltimore (Duval)	—	—	++	++	+	—
New York (Goodwin)	—	—	++	++	+	—
Type 3.						
Seal Harbor (Park)	—	—	+	—	++	++
New York (Hiss 7)	—	—	+	—	++	++
Mt. Vernon (Collins)	—	—	+	—	++	++

It was noted that the serum of an animal immunized to a member of either of the mannite fermenting, indol producing types had considerable common agglutinins for the other type; these two types seem to Dr. Park to be in every way nearer to each other than to the Shiga type. This is true, he said, not only in their agglutination affinities but in their having more common immune bodies. The serum from an animal immunized to one of the mannite fermenting types protecting the members of the other type almost as well as those belonging to its own and that this was true to only a slight extent between these types and the Shiga varieties. The cases of summer diarrhea where dysenteric symptoms were absent had as a rule few or no dysentery bacilli. When present they were almost never of the true Shiga type.

Comparison of Living and Dead Tubercle Bacilli in the Production of Antituberculin.—Dr. Trudeau presented briefly the results of inoculation experiments. He showed three photographs of autopsied animals showing the effects produced by inoculation with living bacilli and with dead bacilli, compared with the control animal. These showed a greater diseased condition in the animals injected with dead bacilli and he said that there was a greater death rate among these and that they died in a shorter time. He concluded therefore that there are greater hopes in the injection of living bacilli, in the production of artificial immunity.

Differences in Precipitins Produced by Tubercle Bacilli.—Dr. Edward R. Baldwin, of Saranac Lake, presented the differences obtained in precipitins from two sets of animals immunized with fresh normal saline extracts of tubercle bacilli and the residue respectively. Well marked precipitation was obtained from the extract serum upon both extract and residue. The residue serum, on the contrary, precipitated only the latter. Multiple precipitins or other antibodies with different affinities are possible results, he said, of tuberculous infection.

Observations with Tuberculins from Different Races of Tubercle Bacilli.—Dr. S. B. Wolbach, of Boston, reported upon work undertaken at the suggestion of Prof. H. C. Ernst and which consisted in the treatment of tuberculous guinea-pigs with tuberculin and in making tests for differences in specificity of tuberculins made from human and bovine tubercle bacilli. The cultures used for inoculations and for manufacture of tuberculins were a human and a bovine culture, isolated directly from human and beef blood serum. The work consisted of three parts: (1) The testing of virulences in which the bovine culture was proven more virulent for guinea-pigs and rabbits, though the human culture was a highly virulent one; (2) in testing the strength of the tuberculins the method of Dönitz was used, consisting in the determination of the maximum dose which will cause the death of tuberculous guinea-pigs within twenty-four hours. The tuberculin injections were given at the time when the guinea-pigs begin to lose weight rapidly. By using each tuberculin upon guinea-pigs inoculated with both cultures it was hoped that differences in intensity of its reaction would be found. This proved not to be the case. The tuberculin from the human culture reacted as intensely upon guinea-pigs inoculated with the bovine culture as with the human culture and vice versa. The method of Dönitz was found to be incapable of yielding quantitative results. It was found that the tuberculins made by Dr. Wolbach were approximately equally active and of greater strength than demanded by Koch, that is, that 0.5 gm. should kill a tuberculous guinea-pig of at least four weeks' standing, in from six to thirty-six hours. (3) The treatment of guinea-pigs with skin tuberculosis. Guinea-pigs inoculated with the above culture by the skin-flap method were used. Guinea-pigs inoculated with both cultures were treated with each tuberculin. Treatment was begun at the end of the first week, three injections per week being given, starting with 0.0125 gm. doses and gradually working up to 0.2 gm. doses. No differences in the reaction and effect upon the duration of life were observed between the two tuberculins. The effect of treatment was to prolong life and in a few instances the ulcers healed as described by Koch. This did not occur with the control guinea-pigs. Dr. Wolbach summed up his conclusions reached as a result of the above experiments as follows: (*a*) That there are no specific differences between the tuberculins made from human and bovine tubercle bacilli. (*b*) That the tuberculin treatment is, on the whole, favorable in its action upon tuberculous guinea-pigs. (*c*) As a result of the autopsies upon the guinea-pigs used and upon many others the decision was reached that there are no essential differences in the diseases caused by the two varieties of tubercle bacilli.

The Effect of Certain Blood Sera (Leucocytotoxic) on the Ameboid Motion of Leucocytes.—Dr. Henry Asbury Christian, of Boston, in the Pfeiffer warm chamber studied the action of various blood sera on the ameboid motion of leucocytes. Natural sera, such as that of the rat, rabbit, dog, goose, frog and salamander, had no effect on the leucocytes of these animals, while that of the hen stopped the ameboid motion of the leucocytes of the dog, which was the only example of a natural leucocytotoxin in the blood found. The serum of animals immunized by injections of spleen, liver and kidney are leucocytotoxic, stopping instantly the movement of the leucocytes of the animals whose tissues were used in immunization. This action was produced by the parenchima of the organs injected and not by the included blood, showing that the leucocytotoxic serum can be produced by the injection of cells not of the leucocyte group. The specificity in action of such sera is, said Dr. Christian, similar to that of hemoglobins.

Experimental Production of Liver Necrosis by Hemagglutinins.—Dr. Richard M. Pearce said that the presence of agglutinated red blood corpuscle thrombi in connection with the focal necrosis of the liver of experimental hog cholera had been demonstrated by Boxmeyer and that he himself had produced in the dog somewhat similar necroses by the injection of a hem-agglutinative serum (serum of rabbit injected with dog's corpuscles). This serum in doses 1 c.c. per kilo weight causes in the dog definite focal necrosis in which agglutinative thrombi may be easily demonstrated in the circulating blood a few minutes after the injection of the serum. Other agglutinative sera are that of rabbits receiving injection of dog's bile and may produce similar necroses.

A Simple Method of Isolating from Water, Forms Which Agglutinate with Typhoid Serum.—Dr. J. George Adami described a method devised by Dr. J. A. Chopin and himself. The main objects desired were (1) to employ the maximum amount of the suspected water for culture purposes and (2) to use a large quantity also for purposes of agglutination. The water (*e.g.*, the water from a flowing stream) is collected in sterilized Winchester quarts, holding about two liters. In the laboratory 20 c.cm. of a one per cent. glucose broth is added to each and the Winchesters are then incubated for eighteen to twenty-four hours. Glass tubing of 7 mm. inside diameter is taken in one-half meter lengths, the tubes closed at one end to form elongated test tubes and filed around about one inch from the closed end. Into each of a series of such tubes is placed 10 c.cm. of the incubated water, and now into each is dropped a definite amount of a known typhoid serum. Any form agglutinated by the serum forms a sediment at the end of three to five hours. Then the filed closed end is broken off, the sediment washed with sterilized water, a loopful added to a tube of nutrient broth and from this Hiss, Elsner and neutral red plates are made. The method has brought to light forms which are clumped by high diluting of typhoid serum.

Bacteria in the Mesentery of Normal Animals.—This paper was read for Dr. A. G. Nicholls, of Montreal, by Dr. Adami. The method is easily performed and needs only the magnification given by the one-twelfth immersion lens usually employed, and the presence of bacteria undergoing dissolution can be demonstrated in the rabbit, guinea-pig, cat, etc. It consists of

killing the animal quickly by a blow on the neck, rapid opening of the abdominal cavity under strict aseptic precautions, pulling a loop of the endothelial covering of either side of the mesentery by a sterile swab, cutting out and hardening a small thin piece of the same in formalin, stain preferably by carbol thionin for several hours and careful declorization. If sections of the stomach or intestine be stained similarly it is seen that while at the outer ends of the acini the abundant bacilli stain well and characteristically deeper down they stain only in part and tend to assume diplococcoid forms. Similar diplococcoid forms of degenerating bacteria together with occasional well stained forms are to be seen in the mesentery prepared as above. Most often in the immediate neighborhood of the nuclei of the cells lining delicate lymph and blood capillaries. These may be abundant. Presumably they are carried inwards from the lumen of the intestine by the leucocytes.

Bacillus Agglutinated by High Dilutions of Typhoid Serum; Isolated from Water.—This paper by Dr. O. Klotz, of Montreal, and read by Dr. Adami, described the characters of the form isolated by Drs. Adami and Chopin from water at Montreal which agglutinated with high dilutions of typhoid serum. He compared it with a series of similar forms fermenting various sugar broths and not coagulating milk which had previously been isolated by Carl Sternberg, of Vienna, which also agglutinated with typhoid serum, and called attention to the existence of this group of forms. His, he denominated the *Bacillus perturbans*. It was definitely pathogenic to rabbits and guinea-pigs at first, employing not the strongest sera there seemed to be no difference in agglutinating powers between it and the *Bacillus typhosus*. Later, with stronger sera a human typhoid serum which clumped the typhoid bacillus in dilutions of 1 in 6,200 clumped the *Bacillus perturbans* in dilutions of 1 in 1,550. Similarly a typhoid immune rabbit serum gave complete clumping of the two forms and dilutions of 1 in 4,960 and 1 in 2,480 respectively. Immunizing a rabbit against the *Bacillus perturbans*, its serum agglutinated both the typhoid bacillus and the *Bacillus perturbans* in dilutions of 1 in 2,480. Dr. Klotz said that his observations serve to confirm the conclusions already recorded by other observers that even where a positive result is obtained with relatively high dilutions of typhoid serum it is unwise, not to say mistaken, to regard as specific, the reaction. It is the presence of a typical typhoid reaction plus the clinical symptoms of the case, he said, that must be taken into consideration, and now that typhoid cultures are obtainable in so large a proportion of cases from this blood he suggested that those cultures afford the surest diagnosis. So also in examining suspected water obviously the mere obtaining of agglutination with typhoid serum is not to be regarded as adequate evidence of the existence in it of the typhoid bacillus.

(To be Continued.)

NEW YORK ACADEMY OF MEDICINE.

Section on Orthopedics.

Stated Meeting, held March 3, 1904.

The Vice-President, Virgil P. Gibney, M.D., in the Chair.

A Consideration of the Ultimate Results of the Bloodless Replacements of Congenitally Dislocated Hip.—This was the paper of the evening, and was read by Dr. John Ridlon, of Chicago.

Dr. H. Augustus Wilson, of Philadelphia, in the discussion, said that after listening to the very elaborate paper of Dr. Ridlon, he felt as if little remained to be said, except possibly with reference to the cases that Dr. Lorenz had personally operated upon in the Jefferson Medical College Hospital in Philadelphia. When Dr. Lorenz accepted Dr. Wilson's invitation to hold a clinic in Philadelphia, there appeared to be no suitable cases for him to operate upon. A notice was put in the medical journals, and in a few days cases came in large numbers, the great majority not congenital dislocation of the hip, but all sorts and kinds of deformities. Twenty cases of congenitally dislocated hips were selected and submitted to Dr. Lorenz. From these he chose a sufficient number to demonstrate his method of treatment applied to the various ages. The results of the nine cases he operated on in Philadelphia are as follows: Three perfect anatomical and functional results. These patients are under two years of age; one a single dislocation, the other double. Three cases have good functional results. By that it is meant that they are so far improved over their former condition as to make the trivial limp apparent only to an expert. This gives 66⅔ per cent. successes. Six out of the nine have good functional results. One was not reduced—a child aged four years, who had been previously subjected to various forms of tenotomy, stretching in bed, extension, had worn a brace a considerable length of time. In this case there was failure to produce a reduction. Lorenz attempted reduction and failed, after almost exhausting his strength. It was put up in typical position, and in six months radiograph showed the hip to be not reduced. The ultimate result was great improvement of function. A double case, in six months, after the original cast was removed, showed apparent typical replacement. The conditions which made it slip were undoubtedly due to the fact that through a misunderstanding on the part of the physician who had charge of the case (it was not under Dr. Wilson's care), of the necessity for the weight-bearing feature emphasized by Dr. Lorenz. This child was kept at rest, sitting or lying in bed. At no time was it taught any method of extending the legs to get the hamstrings in full extension. It did not step on its foot for six months. The muscles of both legs were atrophied from disuse, the hamstring tendons were contracted so that the knees could not be straightened, and that made the joint slip from a very shallow acetabulum. Dr. Lorenz in June last, saw the case and found it necessary to etherize the child and stretch the hamstrings again. Notwithstanding the second manipulation upon the hamstring tendons, both hips slipped. The speaker had been surprised at the low valuation that Dr. Lorenz placed upon the radiographs in cases of congenital dislocation. Dr. Wilson thought they were useful as a matter of record rather than as a test of conditions. The radiograph of several cases showed a deep acetabulum, completely deceiving those interested as to real conditions present, which were found to be filled with cartilage and fibrous tissue. Casually alluding to the results in the 32 cases under Dr. Wilson's observation in Philadelphia, he said there had been no paralysis of any sort, nor disturbance of the circulation. In one case there was temporary edema of the vulva, necessitating catheterization for forty-eight hours; after that function returned. There is a question as to whether we are justified in considering the classification of perfect, anatomical results. Perfect anatomical results do not always give the best functional results, and function is the object always desired. It is clearly impossible to make a new hip that will be anatomically perfect in cases that have been born with abnormal hips, and the highest ideal should be to obtain functional recovery and a functional result is not always obtained in a so-called anatomical replacement. A boy, eleven years of

age, by radiograph and palpation, showed a full, anatomically perfect replacement, but he had rigid, stiff hips which possibly might become limbered up after a while, but were far from a functional recovery. Too fine a distinction is made in classes of cures. If a standard of functional recovery can be formed, a higher percentage of successful results will be attained, and justice will be done more fully to the man who has taught us.

Dr. Bradford, of Boston, said that the subject of congenital dislocation of the hip had been under such active discussion that it deserved a most thorough, scientific and academic consideration, free from the personal prejudice. The congenital dislocations of the hip at the Children's Hospital have been carefully examined and a report has been made of upward of 130 cases, by the Orthopedic Staff of the hospital. This report has been submitted to an independent committee of surgeons who will publish a statement after a careful examination of the cases, and he did not wish to anticipate the report by an earlier presentation of figures. The anatomical facts of congenital dislocation of the hip were formerly not well understood, but after investigations of the last thirty years, following the valuble pioneer work of Prof. Carnochan, of New York, the pathological anatomy is well understood. The surgical indications made clear by the pathology of the affection used to be met to secure perfect cures. It has been demonstrated in many instances by many surgeons, that perfect anatomical cures have been obtained in Europe and this country, and perfect anatomical cures are what all surgeons aim for and obtain in a certain percentage of cases. How large that percentage of cases is, will be determined by further investigation. In the statistics collected at the Children's Hospital, in Boston, based on observations dating back for twenty years, the results were most encouraging in that it appeared that the percentage of absolute, anatomical cures has been steadily increasing. By cures was not meant functional cures, or transpositions, but results by which the head was replaced in the acetabulum with perfect restoration of gait, shown by measurements, by palpation, by observation and by skiagraph record, and it is probable that in the near future these will be the results that the surgeon will expect to attain It was within the recollection of many surgeons that congenital clubfoot, which is practically a congenital dislocation, was looked upon as a deformity in which a satisfactory functional result was considered all that was to be desired. We have arrived at a stage of surgical skill by which a surgeon, if he does not obtain a perfect cure in clubfoot, is prompted to look for some defect in method. Congenital dislocation of the hip may eventually be looked upon as a distortion of a similar class. Relapses occur after congenital dislocations of the hip have been reduced, in a large number of cases. These relapses have been already considered in a paper presented a short time ago before the New York Academy, so the subject will not be again brought up at this present time, although it is one of much interest and importance, and it is at present not yet determined whether the percentage of relapse is greater after reduction by or without incision, but Dr. Bradford entirely agreed with Dr. Ridlon that in operable cases, the manipulative method as demonstrated by Dr. Lorenz was the method of choice. This may not, however, be considered a permanent solution of the question. Improvements in technic were to be expected in this as in other branches of surgery. At present in congenital dislocation of the hip there is a condition which is anatomically well understood. In certain of the older cases, those with bony change, manual reduction is not practicable. In a large percentage of cases in young children, reductions are not only practicable, but possible, and to be expected. In a certain percentage of these cases relapses occur. Relapse, as we understand after treatment more thoroughly, may be expected to become less frequent. At present manipulative methods are to be tried in all operable cases. Where this fails owing to a folding of the capsule in front of the reduced head, incision is advisable. In cases with osseous change, operations upon the bone are to be considered. It would seem that anatomically there is no greater difficulty in the cure of congenital dislocation of the hip than in the cure of congenital clubfoot, and in the next decade, the gentlemen of this Academy will, no doubt, when meeting together, consider congenital dislocation of the hip one of the readily curable deformities.

Dr. Whitman said that from his own experience he could not accept the reader's statistics as representative. Two years ago he had presented before the Orthopedic Section of the Academy ten patients cured by the Lorenz method, some of whom had been treated five years before. These patients were actually cured in the sense that no evidence of the former disability remained. In his opinion in properly selected cases (the younger the patient the better the prospect of cure) 40 per cent. of the cases should be perfectly cured by this method. He did not, however, limit himself to the Lorenz operation, but having failed by that method he would recommend arthrotomy. By this means one might assure himself that the head of the femur was actually within the acetabulum, or if the femur were so twisted as to make permanent apposition impossible one might restore the normal relation by means of osteotomy. Finally the old Hoffa-Lorenz operation might serve as a last resort to assure the stability which was hardly possible without bony support. It was true that the best result by this method could not compare with the perfect cures attained by bloodless reduction. The average result, however, was better than after transposition. He was inclined to think then that when bloodless surgery had found its limit one should supplement it by other surgery, and that by a more comprehensive treatment the results would be greatly improved. Dr. Whitman said that there were different varieties of transposition which had not been recognized apparently, in the statistics presented. One was caused by hyperextension, in which the head of the femur was forced too far forward so that it could be felt and seen directly beneath the femoral artery. In cases of this character the limb remained, when the plaster bandage was removed, in an attitude of abduction and extension; motion could be restored only by persistent manipulation, and in some cases an anesthetic might be necessary to lessen the distortion. Yet, in this class of cases the final result was likely to be good and even perfect because of the permanency of the reduction. If, on the other hand, the head of the femur were just outside the femoral artery the result was usually unsatisfactory in that the shortening was progressive until the head came to a resting place beside the anterior superior spine. In only one class of cases could such transpositions be regarded as a good result. If, for example, one had transformed a bilateral posterior into a bilateral anterior displacement the contour of the body was improved and the symmetrical disability was markedly decreased, but if in such a case one side were actually cured and the other transposed, the surgeon might be accused of injuring the patient because the swaying gait had been changed to a noticeable limp. In such a case one should always perform the open operation with the aim of assuring stability, even at the expense of a part of the range of normal motion.

Dr. Jacobi asked the earliest age at which a patient

should be operated on when found to have congenital dislocation of the hip. A case might be discovered when a baby was but a few months old; is any operation in order at this time? Usually cases are not discovered at this time but occasionally they are.

Dr. Newton M. Shaffer, in the discussion on Dr. Ridlon's paper, said, while not agreeing with all his conclusions, the paper presents many valuable facts, and however the statistics he presents may be regarded, they form an intelligent basis and a comprehensive one for judging of the Lorenz operation and its results. He regrets his unpreparedness to give a satisfactory analysis of the results obtained in the patients coming under his observation, but preferred to make reference to those only who have been under his care, for a longer or shorter time, at the State Hospital. These were four in number, all operated upon by Dr. Lorenz, either at the Cornell Clinic or at the hospital. The lessons conveyed by a study of these cases—their behavior under treatment—their progress after the gypsum splint was removed—and the results thus far obtained, are most interesting. But at this date, about fifteen months after the operations, it is impossible to state the ultimate results—and it may be years before this can be definitely determined. In all these cases—and all were apparently successfully reduced—the tendency to the condition known as the "anterior transposition" was marked. He thinks that Dr. Ridlon's statement that this is due, in a large measure, to the conditions produced by the tearing of all the resisting tissues, especially the muscles and nerves, is correct. In the after-treatment of this condition one should study the "adaptive muscular conditions" as he has termed it, more closely. Normal muscles shorten and lengthen as opportunity is given, as, for instance, in the acquired talipes equinus associated with the shortened leg in hip disease. In infantile paralysis, the shortening of the unparalyzed muscles is always marked. In lateral curvature, the same thing is observed. Muscles lacerated, as in this operation, for instance, the adductor group, by the force necessary to reduce a congenitally dislocated hip may be so far injured that it may be years before they can regain their normal contractility, if they ever do. Add to this a nerve injury and the condition becomes more complicated. Studying the results which have come under his observation, he should, in the future, give these muscles a much longer time to recuperate, before discarding mechanical protection. In other words, after the plaster-of-Paris splint is removed, a simple steel support should be applied, as for instance, in extensive infantile paralysis, embracing the pelvis with a conventional pelvic band controlling the entire limb to, and involving the foot, with anteroposterior motion, only, at the hip, knee and ankle, with or without perineal pads, as indicated. This would place the femur and the hip under the control of the surgeon and prevent any "anterior reposition" and the "weight-bearing" principle could be scientifically applied, while the patient walks about—with the head of the femur in the acetabulum. Massage, etc., could be used to restore the lost muscular power. He has applied this treatment to two of the patients now under observation at the State Hospital—who are doing well. He regrets he did not apply it to two others who have done badly since they left the hospital, with apparently perfect reposition.

Dr. V. P. Gibney said the presentation of the subject by three or four men who had worked so lately in this line, and especially one gentleman who had come from the city of Chicago with a very well prepared paper and who had given such carefully compiled results, led him to refrain from any discussion. He thought his colleagues would agree with him in saying that the cases operated upon at the Hospital for the Ruptured and Crippled are hardly ready for presentation of final results. In the last Annual Report of the hospital he had given a brief résumé of results, though far from final. With the opportunities afforded at the hospital for protecting the joints and for operative interference, he thought all concerned felt that it is best to reserve statistics until a later date. He believed the results would compare very favorably with those shown by Dr. Ridlon.

Dr. Ridlon said, in answering Dr. Jacobi, that the earliest case of congenital dislocation of the hip he had had anything to do with was one of seventeen months. There can be no question that the earlier one operates, the easier it is to make replacement and the less the injury. On the other hand, the earlier the operation, the more difficult the retention because the delicate baby's skin does not bear covering as does that of an older child. A baby wets the plaster splint. One case operated on by him, which he reported on as having relapsed because the splint was wetted and bent (the child flexed and the head went out backward) was operated on by Lorenz. The result was anterior and supracotyloid displacement. It is an annoyance to have to change a plaster splint, reeking with urine, almost every week for eight months. Earlier than eighteen months, one does not recognize the dislocation; generally not until the child has walked. In one case a child had clubfoot and congenital kyphosis, coming for treatment when six weeks old; it was not known that she had a dislocated hip until she was nearly three years old. From two to four years is the period of choice—when the child is old enough to be cleanly. As to Dr. Whitmans remarks, that the greatest thing to be desired in the treatment of congenital hips would appear to be stability; the speaker would not agree. He had the pleasure of examining cases operated on and cured by Dr. Whitman in 1900. They were certainly replaced and certainly stable, also certainly stiff by the cutting operation. Dr. Ridlon did not consider a stiff hip in a good position, as good for a patient to use or as desirable as a hip with which he can walk, with just a little limp, which can be bent to a sitting position. He thought it best to get a functional result, even if not a perfect anatomical replacement. Dr. Whitman also spoke of different transpositions. Those cases in which the head has lain back of the artery, Dr. Ridlon had called extreme anterior transposition in contradistinction to those lying to the outer side of the artery and on a level with the acetabulum as shown by the X-ray; where the head could be felt but not seen, while those back of the artery can be seen as well as felt by him.

BOOKS RECEIVED.

The MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

PREVENTIVE MEDICINE. 12mo. Maltine Co., Brooklyn, N. Y.

ATLAS AND EPITOME OF OPERATIVE GYNECOLOGY. By Dr. O. Schaeffer. Edited by J. C. Webster. 8vo, 138 pages. W. B. Saunders & Co., New York, Philadelphia and London.

SYSTEM OF PRACTICAL SURGERY. By Profs. E. von Bergmann, P. von Bruns and J. von Mikulicz. Translated and edited by Drs. W. T. Bull and W. Martin. 8vo, 936 pages. Illustrated. Lea Brothers & Co., New York and Philadelphia.

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ORIGINAL ARTICLES.

THE BEHAVIOR OF THE COSTAL ARCH IN DISEASES OF THE ABDOMINAL ORGANS AND ITS IMPORTANCE AS A DIAGNOSTIC SYMPTOM.

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THE costal arch, composed of the consecutive portions of the seventh, eighth, ninth, and tenth costal cartilages, extends from the lower extremity of the sternum in front obliquely downward, outward, and backward, parallel to the surface of the body to the apex of the tenth rib behind. It serves as a connecting link between the corresponding ribs and the sternum, thus completing the wall of the lower part of the thoracic cavity. The space intervening between the individual cartilages are composed of the same structures as in an intercostal space, namely, of muscles and of fascial layers attached above and below to the borders of the respective cartilages. To their surfaces, as well as to their connecting ribs, are attached in addition the diaphragm, and, in general, the upper portions of all the muscles of the abdominal wall.

Although, in a strict anatomical sense, the lower border of this arch forms in front and laterally the corresponding most dependent portion of the thoracic cavity (which, posteriorly, decends still further to the level of the twelfth rib), it nevertheless practically forms as well a segment of the upper anterior portion of the abdominal wall, corresponding to that portion of the cavity in which very considerable portions of the liver, spleen, and kidneys, and a moderate segment of the stomach are situated; in fact, the lateral portions of the liver and spleen are in places separated from the costal arch only by a very thin partition of diaphragm, pleural cavity, and lung. The extension upward in this way of the abdominal cavity above the lower level of the costal arch is readily accounted for by the well-marked concavity of the domeshaped diaphragm.

Participating, therefore, in the formation of the walls of both the thoracic and abdominal cavities, and serving as well for the attachment and support of the abdominal muscles, it is not at all surprising that the costal arch should be materially affected by pathological conditions of contiguous organs.

In the normal state, the costal arch participates in the respiratory movements of the chest and abdomen, being slightly elevated during inspiration, and lowered during expiration. This excursion can be prevented during quiet respiration by the gentle pressure of the examiner's hand; in fact, in any part of the respiratory cycle, with the patient in the recumbent position and breathing quietly, the costal arch can, in all its different segments, be forcibly pressed into the abdominal cavity a variable distance, according to the degree of its inherent elasticity. Thus, its sternal extremity—composed entirely of cartilage and supple, as well, in virtue of its intercartilaginous joints, can be depressed a greater distance than its posterior segment, which is more rigid because of the firm ribs with which the cartilages articulate. Again, the arc of excursion gradually diminishes as the patient grows older, due to calciferous degeneration and the resulting solidification of the costal cartilages and the not infrequent obliteration of their joints. In the healthy adult, the completion of ossification in the contiguous ribs account for the fact that the movement of the costal arch is not as extensive as it is in children, although it is very much more extensive than in elderly people.

This normal excursion of movement of the costal arch is frequently disturbed, and this is true not only of its active respiratory movement, but more especially of that passive movement toward the abdominal cavity which it may be made to describe through the pressure of the examiner's finger. Interference with its active respiratory movement is elicited by inspection and is manifested chiefly in asymmetry of expiration, the less extensive expiratory recoil of the affected side being checked in a purely mechanical way, before it has been fully completed, by the presence of underlying neoplastic or inflammatory matter. In these cases the pathological condition must be painless, or, at all events, the pain, if present, must not be intensified by respiration for in painful conditions the resulting involuntary inhibition of respiratory movement affects both arches alike, irrespective of the side in which the inflammatory focus is situated, and no criterion of comparison exists. Hence asymmetry of the elastic recoil of the costal arch is to be observed chiefly in contiguous neoplasms and cysts, and in inflammatory conditions only after the subsidence of the acute and subacute stages and their associated pain and tenderness has taken place. Under these circumstances, accumulation of pus, as in "cold" abscess, may interfere with the recoil of the overlying arch.

Any change in the passive movement of the arch can be detected naturally only by palpation, and in eliciting this symptom, not only should the nature or character of its resistance to the surgeon's finger be determined, but one should observe as well whether the resistance is participated in equally by the entire arch or is most marked in one of its segments. In both normal

and pathological conditions the degree of what may be called the "costal resistance" can be roughly estimated by the distance which the costal arch may be made to traverse through the moderate pressure of the examiner's fingers. The examination should always be conducted with the patient in the dorsal position, and the abdominal muscles should be relaxed as far as possible by flexion of the thighs and by directing the patient to breathe quietly, with the mouth slightly open. The degree of costal resistance is then best ascertained by placing the extremities of the second, third, and forth fingers of either hand, respectively, on corresponding segments of the costal arches. Quick but gentle pressure is then made simultaneously, during expiration, in a direction toward the vertebral column, and any difference in the degree of mobility of either arch carefully noted. Proceeding downward and backward from the sternum to the tenth rib along the lower border of the costal arch, successive segments are then compared with each other and the presence of costal resistance in any segment readily determined. In case of bilateral costal resistance, symmetrically developed, pressure exerted simultaneously on the costal arches would decrease the distance between to a very much less extent than in normal.

By a similar procedure, the relative resistance of the diferent segments of one arch may be ascertained, and by unusual deviation from the normal condition detected without comparing the affected segment with the corresponding segment of the opposite side. In this connection, however, the greater normal elasticity of the sternal extremity must not be forgotten, and the desirability of supplementing the examination by a comparison of the abnormal with the normal side cannot be too greatly emphasized.

Under normal conditions, either costal arch may be depressed in this manner a very appreciable distance, and it may roughly be stated that in children, especially near the sternal extremity, this distance is somewhat greater than an inch; in adults, and as the vertebral extremity is approached, between one-half and three-quarters of an inch, while in old people, the distance decreases considerably less than one-half an inch. On the other hand, in pathological conditions, both the character and degree of costal resistance vary very widely. Thus the resistance is of a hard, unyielding nature in the presence of underlying neoplasms, the sensation here imparted not differing materially from the sensation imparted by the palpation of a similar immovable growth on the exterior of the body; in a general way, it may be described as "board-like" in quality, and is not in any sense of the word elastic. In the presence of an acute or subacute inflammatory process, however, the costal resistance is very highly elastic, and the excursion of its movement very considerably limited. In the early stages of such a condition, before the formation of exudate, the increased resistance presented is due to more or less complete immobilization of the costal arch through the reflex contraction of its attached muscles. Subsequent exudation of serum or pus still further increases the pre-existing costal rigidity, and diminution is observed only after subsidence of the acute stage has taken place.

It is very important to emphasize, that asymmetry of costal resistance may be detected when there is no marked difference in the respiratory movement of the costal arches. Thus, as has previously been mentioned, in all acute inflammatory conditions of adjacent organs, the involuntary inhibition of the respiratory movement of the costal arch affects both sides alike. The difference in the costal resistance in a case of this character is, however, easily appreciated, and only in those instances (which must be very rare), in which the pathological process is symmetrically developed in the upper half of the abdominal cavity could any difficulty in eliciting this symptom be encountered.

Increase in costal resistance may or may not be associated with tenderness or pressure. Resistance due to the presence of neoplasm may usually be detected without pain or discomfort to the patient. On the other hand, pressure on the affected segment of the costal arch in adjacent inflammatory conditions almost invariably elicits tenderness if the process be acute, and occasionally in chronic cases as well.

The behavior of the costal arch in the presence of painful inflammatory conditions in the lower half of the abdominal cavity sometimes deviates from the normal. In these cases, respiration is involuntarily largely thoracic, and the abdominal muscles are held motionless in order that there may be the least possible displacement of the inflamed organ. This accordingly results in a symmetrical decrease of the costal respiratory movement, and, on palpation, a corresponding symmetrical increase of the costal resistance may be observed, although it is usually not well pronounced. Notwithstanding, however, that inflammatory processes in the lower half of the abdominal cavity are not generally associated, in their early stages, with any appreciable change in the degree of costal resistance, subsequent extension upward, should it occur in any instance, will result in the gradual development of this resistance as soon as the inflammatory process approaches a costal arch. In these cases the manifestation of this symptom serves a most useful purpose, not only as an indication for immediate operative interference, but also as a guide to that part of the abdominal cavity in which the inflammatory process is most rapidly extending, and to which the surgeon's efforts should be energetically directed.

Case I.—P. J. H.; male, aged thirty-three years; admitted to the Presbyterian Hospital March 27, 1902. Patient denies venereal trouble. Has always indulged moderately in alcoholics. Fourteen years ago suffered from an attack of acute intermittent fever. During the past six

years, patient has had occasional attacks of indigestion. On January 27 last, patient developed for the first time an attack of severe, cramp-like pain, located in the right hypochondrium, lasting between eight and nine hours, and associated with chilly sensations with subsequent fever. The subsidence of the pain was followed by jaundice, the stools became clay-colored, and the patient was in bed for four days, during which time there was tenderness and swelling over the region of the gall-bladder. The jaundice and clay-colored stools persisted for from between two and three weeks, and then disappeared, the patient feeling perfectly well and able to resume work. On February 24 there was a similar attack, the acute, cramp-like pain lasting for seventeen hours, and again on March 25, when the pain persisted for twenty-four hours.

Examination on Admission.—There is tenderness over the right hypochondriac region and a small mass can be felt, movable with respiration, having the configuration of the gall-bladder. There is considerable rigidity of the upper portion of the right costal arch and of the upper part of the rectus directly beneath it. There is slight icterus, with moderate pulse and temperature elevation. At the end of several days, the local symptoms of inflammation together with the icterus, had subsided, and both pulse and temperature had returned to normal.

Operation. (Gas and Ether).—Vertical incision along the outer border of right rectus about four inches in length, and deepened to and through the peritoneum. The gall-bladder was embedded in a mass of omentum, the upper border of the transverse colon being adherent to the anterior border of the liver. After separation of the adhesions, the gall-bladder was exposed and was found to be slightly increased in size with a very much thickened wall. The neck of the bladder and the cystic duct were then enucleated from the bed of adhesions in which they were contained, and through their wall numerous calculi could be felt. The gall-bladder was so firmly adherent to the under surface of the liver that its separation could not be accomplished without risk of hemorrhage. It was therefore opened, some forty calculi of varying size removed from its interior, and after the excision of its mucous membrane, it was sutured to the parietal peritoneum, as in a typical cholecystotomy. Drainage.

Postoperative.—There was moderate temperature and pain. After a week or ten days the bile found its way down the common duct, and the clay-colored stools disappeared. On May 22, the date of discharge, a small superficial sinus persisted, which subsequently closed.

Subsequent History.—Patient continued well for about fourteen months. At the end of that time, some soreness and redness developed in the cicatrix, and on examination a small elastic mass could be palpated. Under an anesthetic the swelling was incised and a small abscess evacuated. Through the abscess cavity the finger could be inserted into the gall-bladder, the walls of which presented a smooth, velvety surface. Only at its fundus, where it emerged into the abscess cavity, was there any evidence of cicatricial tissue. The abscess cavity was drained and quickly closed by granulation without the establishment of a biliary fistula. Since that time (six months ago) there has been no further trouble.

Case II.—R. M., female, aged forty-four years; admitted to the Presbyterian Hospital December 22, 1902. With the exception of occasional attacks of subacute rheumatism, patient has always been well until the development of the present trouble. Last July, after a hard day's work, patient was seized with a severe pain, extending from the pit of the stomach up to the right breast, lasting about one and a half hours and followed by fever and perspiration. During the following night and the next day there were several attacks of slight hematemesis. There was also a slight tinge of jaundice, lasting only for several days. Five weeks ago the second attack occurred, similar in its general features to the first, but more severe. Ever since then, these attacks have been repeated on alternate days, without hematemesis, and three weeks ago pain in the right shoulder-blade developed. During this time patient has been unable to attend to her household duties.

Examination on Admission.—There is tenderness on pressure over the region of the gall-bladder, with moderate rigidity of the corresponding portion of the costal arch and of the upper portion of the rectus muscle. No mass can be felt. There is moderate jaundice. Temperature, 100° F.; pulse, 100; both becoming normal on the day after admission. On the third day after admission, temperature rose suddenly to 105° F., the pulse to 100. On the fourth day, the temperature was normal in the morning, but rose to 104° F. in the afternoon. On the fifth day, the temperature rose to 103° F. and then gradually fell, becoming normal at the end of the week. During this time, there was moderate leucocytosis, but repeated examinations of the blood failed to detect the presence of any variety of plasmodium. The local symptoms of tenderness and rigidity had persisted practically unchanged.

Operation January 9 (Gas and Ether).—Vertical incision along the outer border of the right rectus. On opening the peritoneal cavity, the duodenum was found adherent to the under surface of the liver in what corresponded to the fissure of the gall-bladder. The gall-bladder itself was shriveled up to a small mass of connective tissue containing calculous material. It was separated from the tissue in which it was embedded and removed after ligation of the cystic duct. Closure of the abdominal wound in layers after the insertion of a small cigarette drain to the stump of the divided duct.

Postoperative.—Nausea and vomiting per-

sisted for several days, during which time the pulse varied from 120 to 136 and the temperature between 100° and 102° F. At the end of the third day the bowels moved to catharsis, and a biliary fistula became established. Subsequent convalescence, interrupted only by an accumulation of discharge in the wound, three weeks after the operation. Patient has been perfectly well during the past year.

Case III.—C. H. W., female, aged forty-four years; admitted to the Presbyterian Hospital February 8, 1903. Family and personal history negative. Patient has had three attacks of biliary colic, one three years ago, one two years ago, and the last ten days ago. These have all been characterized by dull abdominal pain, most intense in the lower right quadrant, radiating to the epigastrium and up the back, lasting from four to six hours and necessitating the patient's going to bed. There has been occasional vomiting during the attacks and considerable constipation. There has never been any jaundice. Three days ago, the fourth and most severe attack developed, the character and the location of the pain being the same as in the previous attacks.

Examination on Admission.—There is rigidity of the upper portion of the right costal arch and of the adjacent rectus muscle. A smooth, elastic mass of oval shape may be felt occupying the region of the gall-bladder, extending down from the lower border of the liver to a point one inch below the umbilicus. It is tense and elastic, and by bimanual examination fluctuation may be detected. It is dull on percussion. The patient was treated by local applications of ice and kept in bed. At the end of ten days the pain had disappeared, the mass had greatly diminished in size, reaching inferiorly to a point two inches above the level of the umbilicus. Some costal rigidity still persisted. During this interval the temperature reached a point no higher than 100° F. and the pulse at no time exceeded 90.

Operation, February 20, (Gas and Ether).—Vertical incision along the outer border of the right rectus. On opening the peritoneum, the omentum was found adherent to the gall-bladder, which was greatly thickened, somewhat distended, and contained a considerable amount of thick fluid, detritus, and hardened concretions. After the separation of the omentum, and the examination of the cystic and common ducts, which were found to contain no calculi, the gall-bladder was opened and a cholecystotomy performed, the mucous membrane having been removed with scissors and forceps. A probe could be passed through the gall-bladder into the duodenum. The convalescence was uninterrupted, the resulting biliary fistula closing in about six weeks. There has been no recurrence.

Case IV.—M. W., female, aged forty-two years; admitted to the Presbyterian Hospital April 6, 1903. Family and personal history negative. Fourteen years ago patient was seized with abdominal pain, cramp-like in character, located in the epigastric region on either side of the median line, but more severe on the left side, lasting for several days. Since that time these attacks, preceded by a chill and frequently accompanied by nausea and vomiting, have recurred at intervals of every month or two until the last six months, when the attacks have occurred as frequently as every week or ten days. Each attack lasts generally about one or two hours, occasionally for as long a time as two days. Seven years ago, during an attack, jaundice developed and has recurred frequently during the past six months. The attacks have also been characterized by pain in the back.

Examination on Admission.—There is tenderness in the region of the gall-bladder, but no mass can be felt. There is rigidity of the corresponding portion of the costal arch and of the adjacent rectus muscle. On the day of admission, the temperature rose to 106° F., preceded by a chill, the pulse to 120. On the following day both the pulse and temperature were normal.

Operation (Gas and Ether).—Vertical incision along the outer border of the right rectus. On opening the abdominal cavity, the gall-bladder was completely buried in a mass of adhesions of omentum and duodenum. These were readily separated, however, and the bladder was dissected from the under surface of the liver to a point corresponding to the junction of the cystic and hepatic ducts without any considerable hemorrhage. The common duct was found to be free, a probe being passed down into the duodenum. The pancreas was thickened, and the foramen of Winslow was obliterated. The cystic duct was ligated with chromic gut and the abdominal wound closed after a cigarette drain had been inserted down to the stump of the divided duct.

Postoperative.—The patient suffered but little pain. After the end of a week the drain was removed. At no time was there leakage of bile. At no time was either the pulse or temperature above 100. Examination of the gall-bladder showed its wall to be very much thickened and its cavity to contain several hundred calculi about the size of dice. Its wall was considerably inflamed. Patient has enjoyed excellent health since the operation.

Case V.—M. C., female, aged sixty-six years; admitted to the hospital March 16, 1902. Two years ago patient suffered from colicky pain in the region of the gall-bladder, radiating to the opposite side and regularly followed by chills, fever, constipation, and jaundice. These attacks recurred at intervals of four months, and recently as frequently as two or three times a week. The duration of the attack has varied between one and two days. Patient has lost twenty pounds in weight and has become very weak.

Examination on Admission.—Patient is moderately jaundiced. On palpation, there is increased costal rigidity in the region of the gall-bladder and of the adjacent rectus muscle. By bimanual examination the smooth oval outline of

the gall-bladder may be felt projecting a distance of two inches below the lower level of the liver. It moves with respiration. Examination of the urine shows it to be of a specific gravity of 10.20, to contain a small amount of albumin and hyaline casts. The patient's discomfort was so great and the progressive loss of flesh and strength so marked, that she desired to take the risk of an operation notwithstanding the unfavorable condition of the urine.

Operation (Gas and Ether).—The gall-bladder was exposed through a vertical incision along the outer border of the right rectus, and was found to be moderately distended and free from adhesions. Owing to her general condition, a cholecystectomy was considered ill-advised, and therefore after noting the absence of any calculi in either the cystic or common ducts, the gall-bladder was incised, its contents evacuated, and a cholecystotomy performed. The gall-bladder contained a considerable amount of thick mucus and several friable calculi of large size.

Postoperative.—The patient did nicely for forty-eight hours, the pulse remaining under 100, and without special rise in the temperature. At the end of that time the urine decreased rapidly in quantity, the albumin and casts increased, and the symptoms of uremia became established, the patient dying one week after the operation. Unfortunately no autopsy could be obtained. There was no symptom of peritonitis.

Case VI.—L. J., aged twenty-five years; admitted to the Presbyterian Hospital November 10. Patient was always well until about two years ago. At that time, and again six months later, patient suffered from two attacks of catarrhal appendicitis, of which the latter was the more severe. Shortly after the subsidence of the last-mentioned attack, the appendix was removed, the wound healing by primary union. The patient continued to enjoy excellent health until one year ago, when, without warning, a severe colicky paroxysmal pain developed in the right hypochondrium radiating from there to the epigastric region and back. Icterus developed, the stools became clay colored, and the patient was confined to bed for three weeks, chiefly on account of the severity of the paroxysmal pain. The attack then subsided and the patient was well until five weeks ago, when the pain recurred. On this occasion it was continuous, and rapidly became so severe as to require hypodermics of large amounts of morphine. This attack has been associated with moderate jaundice. There has been scarcely any rise of temperature at any time during the attack.

Examination on Admission.—There is acute tenderness on pressure in the region of the gall-bladder, with rigidity of the upper segment of the rectus. The adjacent portion of the costal arch is very rigid and cannot be depressed any appreciable distance toward the vertebral column. On bimanual examination a small rounded mass about the size of a lemon can be felt projecting downward below the free border of the liver at a point opposite the junction of the eighth and ninth costal cartilages. For the twenty-four hours preceding operation, the temperature varied between 99° and 100° F.; the pulse remained between 70 and 80. There was 15,000 and 20,000 leucocytosis respectively in two examinations, separated by an interval of twenty-four hours.

Operation (Gas and Ether).—A vertical incision along the outer margin of the right rectus to the upper extremity of which was later added a horizontal incision extending inward through the fibers of the rectus. The gall-bladder was completely hidden from sight by the adherent great omentum and colon, but was rather easily enucleated down to the region of the foramen of Winslow. The gall-bladder was of large size, its walls thickened and greatly distended, and its separation from the liver above was accomplished only with considerable difficulty. No calculi could be felt in any part of the common duct, and the organ was removed by the division of the cystic duct between clamps, the divided duct and its accompanying vessels being subsequently ligated with chromic gut. After the insertion of a rubber drain down to the stump, and a cigarette drain to the same place through a counter-opening in the right flank, the abdominal wound was closed. Examination of the gall-bladder showed its wall to be very considerably thickened, especially in the vicinity of the junction of its neck and the cystic duct, where almost complete obliteration has resulted from the previous productive inflammation. Its cavity contained a considerable quantity of thick turbid fluid containing a small quantity of bile only. There were two large faceted calculi of the size of acorns and of a peculiar nutmeg appearance.

Postoperative.—During the first twenty-four hours there was a gradual increase in the pulse and temperature from 88 and 101° F. to 128 and 104° F. respectively in the afternoon. There was considerable pain and some nausea and vomiting. There was a free discharge of bile from the upper wound on the second day, and forty-eight hours after the operation the pulse had diminished to 94 and the temperature had receded to 103° F. On the third day the bowels moved to catharsis, the stools being clay-colored. From this time there was a gradual subsidence in the temperature, and the pulse varied between 72 and 80. Some distressing hiccough, however, continued until the beginning of the second week. At about the end of the second week the biliary discharge decreased and the stools began to lose their clay color. At the end of the third week the amount of biliary discharge was very slight. At no time was there any discharge of bile through the counter-opening in the flank, which promptly closed after the removal of the drain. Five weeks after the operation, patient returned to work with a very small biliary fistula.

Case VII.—Acute Cholecystitis without Calcu-

lus.—F. K., male, aged thirty-seven years; admitted to the Presbyterian Hospital January 31, 1902. Patient, a painter by occupation, admits a moderate beer-habit, until ten years ago, since which date he has drunk but very little.

For the past fourteen years, at some time during the summer, patient has had an attack of diarrhea with slight jaundice, lasting for two or three days. The last attack, one year ago, was more severe than any of the others. The present attack began one week ago, with a chill, followed by a rise of temperature to 105° F. There was vomiting and pain over the vicinity of the gall-bladder. The bowels were constipated and lighter color than normal. The urine was high-colored.

Examination on Admission.—The whole abdomen was slightly retracted. There is pain and tenderness over the gall-bladder, but no enlargement can be detected. There is rigidity of the corresponding part of the costal arch and of the adjacent rectus. There is also moderate rigidity of the lower right quadrant and of the entire left half of the abdominal wall. Temperature was 103° F., the pulse 100 (at no time higher), both rapidly decreasing and reaching normal within several days, with simultaneous subsidence of the local symptoms.

Operation One Week after Admission (Gas and Ether).—A vertical incision over the outer upper border of the right rectus deepened into the peritoneal cavity. The gall-bladder was distended, its wall was thickened, and it contained turbid bile. Its lining membrane was congested. There were no calculi. A probe could not be passed into the duodenum. The operation was completed by suturing the gall-bladder to the parietal peritoneum and inserting a drain of gauze into its cavity.

Postoperative.—The convalescence was uneventful, the biliary fistula closing within two months. December 1, 1902. Patient has enjoyed excellent health since the operation.

Case VIII.—Cholelithiasis in the Quiescent Stage.—N. P., aged thirty-one years; admitted to the Presbyterian Hospital May 31, 1902. Patient was always well until five weeks ago, when, without known cause, she was seized with an attack of vomiting and of general abdominal pain, becoming localized within twenty-four hours over the region of the gall-bladder. Subsequently the pain extended to the right scapular region. There was slight jaundice and fever. The stools were of a greenish color and constipated. The pain was so sever as to require chloroform inhalations. In forty-eight hours the attack had subsided. One week later, a similar attack occurred, lasting for thirty-six hours, and followed by pain in the right scapular region for days afterward.

Examination on Admission.—There is pain and tenderness over the region of the gall-bladder, the pain being also elicited by indirect pressure through the overlying eighth costal cartilage. There is rigidity of the corresponding portion of the costal arch, but none of the adjacent rectus muscle. In other respects abdominal examination is negative.

Operation (Gas and Ether).—A vertical incision was made along the outer border of the right rectus. On opening the peritoneum, the gall-bladder presented, free from adhesions, of small size, firmly fixed to the under surface of the liver, and through its walls several calculi could be felt. The foramen of Winslow was obliterated, but no calculus could be felt in either the cystic or common duct. The gall-bladder was cautiously opened and six calculi, each faceted and about the size of an acorn, were removed. The mucous membrane was excised, and the bladder stitched to the parietal peritoneum. No probe could be passed into the duodenum.

Postoperative.—Patient had several attacks of sharp abdominal pain, resembling biliary colic, during the first six hours after the operation. These attacks ceased with the generous discharge of yellow-colored bile through the fistula, and the further convalescence was undisturbed and uneventful, the biliary fistula closing completely within six weeks. December 15, 1903. Patient has enjoyed excellent health since the operation.

(To be Continued.)

THE PULSE AS A GUIDE TO THE LIFE INSURANCE EXAMINER.*

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Life insurance companies justly attach great importance to the records of the pulse, especially as regards its rate and rhythm, but so far as I am aware most of them do not lay particular stress upon its tension. So many and diverse conditions influence pulse rate and rhythm that, considered by themselves, these characteristics are of minor importance, and therefore in the apparently healthy man they should be considered in connection with the blood pressure. For this reason it is proposed in this paper to discuss all three characteristics of the pulse with relation to their bearing on life insurance examinations.

Since a persistent pulse rate of more than 85 is by most companies considered a barrier to insurance, it will be well to first discuss the value and causes of abnormal frequency of heart-action. In the first place clinical experience teaches that a pulse rate of even 100 may be natural to some individuals, and so great an authority as Gibson has stated that more importance is generally attached to undue acceleration than this feature of the pulse deserves. Persons to whom such unusual pulse frequency is habitual are generally of a neurotic temperament, which probably accounts for their tachycardia, and Gibson cites the instance of an Edinburgh shopkeeper who, in addition to a pulse rate never

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below 100, manifested pronounced agoraphobia. This fact should therefore be borne in mind when estimating the significance of persistent rapidity of the pulse.

In the great majority of cases tachycardia is not natural to the individual, but depends upon some factor which puts vagus control in abeyance, or counteracts its influence through stimulation of the accelerator nerves of the heart. Among such exciting factors tea, coffee and tobacco, when used to excess, stand forth conspicuously. Tobacco also slows the action of the heart (Gibson), but it has been my observation that it more often accelerates the pulse, even to the extent of occasioning palpitation. Its effect is said to sometimes persist for six months, or even more, after its abandonment. In this country I believe coffee has to be reckoned with more often than tea, and I can recall several instances of tachycardia and palpitation, in which there was a history and admission of immoderate consumption of this beverage. In one healthy young man tachycardia and frequent intermittence were by himself attributed to coffee and cigars. Alcohol is another recognized cause of frequent heart-action which should always be borne in mind. Not only does it accelerate the pulse for the time being, but old topers often display persistent increase of the pulse rate, and in them, of course, one is naturally suspicious that a chronic myocarditis is at the bottom of the tachycardia.

The caution that should be exercised in attributing serious import to mere frequency of the pulse is exemplified by the instance of a man forty-nine years old, whom I saw recently. He had a pulse rate of 120, yet was without subjective consciousness of the fact. There was nothing to point to heart disease and inquiry elicited the statement that two hours previously he had submitted to an intranasal operation that had necessitated the application of cocaine.

The most frequent, and to my mind the most annoying, cause of tachycardia is the psychical disturbance attending examination of the heart. In some instances the individuals are outwardly composed and assert their indifference to the examination, yet their hearts race away as if possessed. The examiner feels confident of the nervous influence at work and yet he knows that to record a pulse rate of 110, or perhaps 120, will be very apt to invalidate the man's prospect for insurance.

Furthermore, under the influence of excessive frequency of contractions, changes take place in the cardiac findings which become puzzling or are unsatisfactory to record. The apex beat becomes feeble and ill-defined, the first sound at the apex is murmurish, or perchance actually replaced by a faint murmur due perhaps to temporary lack of perfect tightening of the valve-segments by the pull of the papillary muscles. Under such conditions the area of relative dulness may be actually increased transversely, as I have many times observed. What is one to do in these annoying and puzzling cases?

So far as possible the physician must take cognizance of other signs of nervousness, as flushing of the face, coldness of the extremities, slight tremor, etc., and he must resort to devices calculated to divert the patient's attention. Thus it has seemed to me advisable to study the pulse while at the same time plying the person with questions concerning his past history or engaging him in conversation on some topic foreign to the matter in hand. Any practitioner of experience may thus gain a fairly accurate knowledge of the pulse rate, even if he does not actually count the pulse at the time. Later on the record can be made without attracting particular notice, or the count may be compared with one made at the close of the chest examination after some reassuring words have been spoken.

I have sometimes found it useful to stand behind the patient and count the carotid beats while he is engaged in the recital of his anamnesis. It is also a good practice to make those nervous individuals recline at ease on a couch when the excited heart will often quiet down materially. After a time they may be told to jump up suddenly, or to hop on one foot about the room for the purpose of testing the competence of the heart, for it has been my observation that a merely excited heart does not show as marked contrast between the rate of the pulse at rest and during exercise as is the case when the tachycardia is due to cardiac inadequacy.

An important matter in determining the significance to be attached to undue frequency of the pulse is its tension. Only exceptionally is blood pressure materially increased by pronounced tachycardia, such as is apt to attend psychical disturbance, whereas increased frequency of the pulse due to some pathological disorder of myocardium is generally associated with increased pulse tension. The statement is generally made that a slow pulse is also a tense one, or conversely that a tense pulse is also slow, but my experience leads me to agree with Rosenbach in his assertion that increase of tension and acceleration are generally combined. Of course, this statement must not be understood as applying to increased frequency of the pulse due to valvular disease, but to that form of hypertrophy seen in the chronic myocarditis of robust middle-aged men with such capacious chests that accurate determination of deep-seated cardiac dulness is difficult. In such a person, therefore, with a pulse rate of 85 to 90 the physician should carefully study the degree of arterial tension.

There are several other causes of abnormal pulse frequency which should be borne in mind. It may be a symptom of pyrexia, and hence it is wise to take the temperature when accelerated cardiac action is observed. It is also most important to remember that tachycardia is said to be a symptom of heart syphilis, especially if combined with irregularity and not attributable to any other ascertainable cause. One should not forget also that abnormal frequency of heart action may be a symptom of the irritable heart of the young

man, which is overstrained by athletics or is weakened by masturbation or venereal excess. Such cases are by no means uncommon. Finally in all cases minute inquiry should be made concerning some recent illness, such as typhoid fever, diphtheria and influenza, since it is well known that the heart my remain rapid for weeks or even months after convalescence, even without obvious signs of cardiac disease.

In concluding this portion of my paper I think it may be safely stated that a pulse rate of over 85, or even of 100, is not to be regarded as in itself indicating cardiac disease. In persons past middle age it is possibly of more serious import than in the young, but even in the former it is not to be regarded as of pathological significance, if no signs or symptoms of beginning inadequacy can be discovered. If, on the contrary, it is associated with abnormally high and sustained pulse tension in a man of middle age with a corpulent abdomen, tachycardia is to be regarded as an early sign of heart-strain and consequently of weighty import. I would not consider such an individual a good risk.

Lowering of the pulse rate to below 60, which is, I believe, the minimum number of heart beats per minute allowed by insurance companies, requires but brief discussion. It likewise may be normal to the individual, yet, even when not congenital, it is not always to be looked upon as denoting some cardiopathy. Nevertheless, unlike tachycardia, it is not the result of nervous or psychical influence, and hence its cause should be sought out before it is attributed to myocardial degeneration. In fact, we now know that decreased frequency of the pulse is less often indicative of fatty degeneration than was formerly supposed.

Two considerations are worthy of note: (1) Retardation of the pulse due to prolongation of diastole from increased vagus inhibition is very different from apparent bradycardia caused by failure of some, perhaps half, of the heart beats, to send a wave to the radial artery. In the latter condition there are abortive or, as Mackenzie terms them, "the early occurring imperfect systoles" due to defective stimulus or defective response to stimulation. This state of things is therefore serious, and calls for careful comparison on the part of the examiner of the number of cardiac contractions with that of the pulse waves. (2) Bradycardia in a man of middle age is likely to be of far more serious import than in the young, since it may portend cardiac exhaustion. Therefore, when an elderly individual presents slowness of the pulse a careful search should be instituted for signs of arteriosclerosis. If the peripheral vessels show slight thickening or minute points of calcareous deposit and in addition the aortic second sound is unnaturally ringing, there is good reason to suspect chronic myocarditis, whether the heart appears negative or not. Be cautious about recommending such cases, since they are likely to prove disappointing.

As already stated, it is commonly supposed that increase of vascular tension goes with retardation of the pulse, but Rosenbach asserts the contrary to be the case; namely, increased tension with incrased rate, and it has often been my observation that lowness of tension is associated with slowness of rate, and pronounced lowness of blood pressure in a person of middle age in the absence of valvular disease is a sign of cardiac weakness.

The disorders of rate just considered are in themslves sufficiently striking to attract attention at once, but unless very extreme they are not so apt to create alarm as is some disorder of rhythm, particularly intermittence. The rhythm of the pulse may be deranged in any one of three ways. It may be irregular, intermittent, or both irregular and intermittent. Since then so much importance is attached to arrhythmia of the pulse it will be well to discuss these deviations from normal with reference to their causes and relative significance.

By intermittence of the pulse is meant, as everybody knows, a dropping out of a pulse beat at regular or irregular intervals and frequently or infrequently, as the case may be. When it occurs at short intervals it is startling and very likely to create the impression of some serious pathological disorder. Clinical experience, however, teaches that such is by no means the fact in the majority of cases. This conclusion becomes apparent when we consider the mode of its production.

The cardiac muscle fibers possess an inherent or automatic power of contraction, and under the stimulus of healthy blood usually contract with a certain definite rhythm. Nevertheless they are under the control of the pneumogastric nerve, so that if the vagus be stimulated the heart may be made to beat more slowly or even to cease its pulsations altogether. When the heart intermits therefore it is because of inhibitory influence sent down the pneumogastric. Instead of the systoles taking place with accustomed regularity, the diastolic period is now and then prolonged and the expected pulse wave is missed at the wrist.

Such intermissions may occur rhythmically or arrhythmically, yet, in either case they are but the expression of vagus inhibition. This being so, it is plain that intermittence of the pulse does not by any means indicate cardiac disease. Its cause generally, perhaps always, lies in some disturbing factor outside the heart and most often in the gastro-intestinal tract. It may occasionally be due to psychical or nervous disturbance. Some such factor is probably at work when intermittence is observed in young and apparently healthy subjects. When it occurs in the middle-aged it may have the same origin, but it may also be due to the gouty poison, whatever that is. At all events simple intermission of the heart's action is not a sign of cardiac disease in itself. As will be seen later on, however, it has quite another significance when the intermittence is apparent and not actual, that is, is of the pulse and not of the heart.

Irregularity of the pulse is a condition in which the individual pulse waves do not display uniformity in force and volume, but are unequal in size and strength. In this state of things it is found that cardiac contractions are likewise of unequal force. At regular or irregular intervals, as the case may be, feeble or abortive systoles occur which are what Mackenzie termed "early occurring imperfect systoles."

These feeble contractions take place at a shorter period of time than normal after the preceding normal systole and consequently are followed by a corresponding lengthening of the succeeding diastole. The heart does not actually miss beats, but it is irregular in the rhythm of its beats. If now some of these abortive systoles are too feeble to send corresponding waves of blood to the peripheral arteries, then the pulse appears to be, or rather actually is, intermittent as well as irregular in force and volume. This state of things has a very different meaning from mere intermittence. Doubtless irregularity of the heart's action may be due to the fact that the blood is altered in quality or quantity, as in acute infectious fevers without actual cardiac disease, in which case we may conceive of defective or variable stimulation of the cardiac muscle.

But probably these abortive systoles indicate more often some alteration in the muscle fibers themselves, in consequence of which they do not invariably respond with uniform strength and rate to the stimulus applied to them. Therefore it is very common to observe this kind of irregularity of the pulse in mitral disease and in chronic myocarditis when the auricles are degenerated and perhaps distended. It is, therefore, not uncommon in elderly men, with or without other demonstrable evidence of cardiac disease.

These abortive systoles are sometimes the cause of apparent bradycardiac as well as of pulse intermissions, and in any case of abnormal infrequency or of intermittence of the pulse, one should compare the heart beats with the pulse waves by means of auscultation. If they do not agree, be careful how you recommend the person for insurance.

Lastly under this head permit me to call attention to the fact that whenever the pulse grows irregular under exercise it is in all likelihood an indication of myocardial weakness which renders the heart unequal to the strain. Fortunately there are usually in such cases objective signs of cardiac disease which the careful examiner will not fail to detect. It may, however, be of aid in correctly estimating the wisdom of recommending a cardiopath as an underaverage or defective risk.

Finally, let me say a few words concerning the significance and value of pulse tension. The men whom it is most difficult to judge correctly are those of middle age who are well nourished and present the appearance of robust health. They usually have capacious chests and, in some instances, rather too corpulent abdomens. In such cases pay particular attention to the tension of the pulse, for it is often the earliest and the most valuable sign of a state of things which will some day declare itself as serious inadequacy of heart or kidneys, or of both.

If the pulse is firm and strong, difficult to compress, and with it is found a ringing aortic second tone, they furnish good presumptive evidence of cardiac hypertrophy even though in consequence of the voluminous lungs the area of cardiac dulness appears not increased. Remember that high and sustained blood pressure, together with moderate hypertrophy, is in the absence of positive urine findings early, and often conclusive, evidence of a beginning interstitial nephritis. Abnormal pulse tension in an elderly man who lives well is oftentimes an indication of sclerosis of the mesenteric arteries, a condition which is very apt to lead eventually to arterial changes in the aorta and coronaries, in short to the hypertrophy generally associated with chronic myocarditis. For these reasons it is my opinion that an essential part of the paraphernalia of every insurance examiner should be some one of the devices now established as reliable for the clinical recognition of too high blood pressure. The use of a Gärtner tonometer, for example, would save many a dollar to the insurance companies and spare the examiner much mortification.

SOME EXTERNAL DISEASES OF THE EYE DUE TO RHEUMATISM.*

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The purpose of this paper is to call attention to those forms of external diseases of the eye which are distinctly rheumatic in their origin, although this has not been ascribed as the causative factor. Neither text-book nor medical journal refers to this influence in producing these affections, and, in our changeable climate they are of sufficiently frequent occurrence to merit consideration. Failure to recognize this fundamental condition is responsible for a continuation of painful, sometimes grave diseases affecting even the integrity of the visual organ itself. Many patients with blear eyes, distorted lids with reddened edges and lost eyelashes, spotted corneæ and lessened sight, the unfortunate victims of long-continued and unsuccessful treatment, would have recovered with uninjured or but slightly damaged eyes had the direct cause of the existing malady been known or even suspected. It is not my intention to claim that all of these bad results might have been prevented; but it can be declared beyond the question of a doubt that the large majority of these patients might have had useful vision restored had critical discrimination in diagnosis been exercised. With an

* Read before the Society of the Alumni of City (Charity) Hospital, December 9, 1903.

acute realization of the position that I take I wish to emphatically state my absolute disbelief in the fantastic theory that rheumatic diseases are due to microorganisms, discovered or undiscovered.

The suboxidation theory with its concomitant results of faulty metabolism and increased disassimilation amply explains, except to those perverted by vast excursions into the limitless realms of fancy, the formation without microbic intervention of a chemical poison from whose toxic influence arises the pathological changes and the protean symptoms of that complex which we recognize as rheumatism.

The diseases that will be considered under the title of external diseases of the eye due to rheumatism are: (1) Marginal blepharitis of the young adult; (2) recurrent hordeoli or styes; (3) recurrent chalazia; (4) circumscribed bulbar conjunctivitis; (5) limited circumscribed bulbar conjunctivitis, and (6) striated keratitis.

1. Marginal Blepharitis Occurring in Early Adult Life.—The form of marginal blepharitis with which we are most familiar is that occurring in children up to the age of puberty. This is usually associated with the so-called strumous diathesis, often depending upon some local irritation as its exciting cause. The variety due to rheumatism differs from this in that it occurs in early adult life, from about the eighteenth to the twenty-fifth year, and sometimes continues up to the thirty-fifth year. Like other diseases arising from systemic causes, it is always bilateral from the beginning and unlike this affection in the young there is no involvement of adjacent structures, the inflammation being restricted to the borders of the lids and never encroaching upon the skin or conjunctiva. It likewise differs in the fact that although there may be some photophobia present, and dust and cold wind may cause an annoying and discomforting irritation, sight is rarely interfered with to any extent. The edges of the lids are red, swollen and everted, and there is an increase in the sebaceous secretion which gathers at the roots of the eyelashes and with exfoliated epithelial cells forms scales and crusts beneath which superficial and deep excoriations exist, the healing of which often produces extreme distortion of the lids. Errors of refraction and muscular imbalance, either or both are competent to set up conditions identical with those just described; but examination of sight readily discloses the defects, and properly fitted glasses will overcome these troubles and likewise accomplish much good by serving as a protection against cold winds and dust.

Rheumatic marginal blepharitis is precisely that condition, the determining cause not having been recognized, which authors declare *"to be more or less constant, without known cause and with little possibility of a cure."* Against this etiological agnosticism, and therapeutic nihilism, I must enter a firm protest, for, if optical error when present be corrected, muscular insufficiency overcome and a thorough antirheumatic treatment, medicinal and dietetic, be enforced, rare indeed will be the case that does not respond to treatment and terminate in recovery. Especial stress is laid upon the necessity for an early diagnosis as to the cause of this trouble because of the serious outcome of the unchecked inflammatory process. Neglect to promptly discover rheumatism as the cause will bring about swollen and permanently thickened and everted lids producing ectropium. Or later cicatrical contraction may invert the lids with resultant entropium with misplaced eyelashes curled inward which start up corneal irritation, inflammation, ulceration and more or less dense opacity, giving rise to interference with, or even abolition of sight. Contraction of the lid tissues not infrequently displaces or even obliterates the punctum lachrymale, and constant lacrimation supervenes to the lasting discomfort and annoyance of the sufferer.

Accompanying inflammation of the borders of the lids is a similar condition of the hair follicles, which we call styes. These may occur independently of the lid trouble and are extremely painful, the redness and swelling being very considerable and entirely disproportioned to the extent and gravity of the disease. Styes are not only multiple but often recurrent, and when this happens they are due to the rheumatic poison. Given a recrudescence of styes, some of them abortive—the so-called "blind" styes—and any optical anomaly present having been antagonized by properly adjusted glasses, local irritation from dust, exposure to heat or cold having been eliminated, the cause is rheumatism.

From hordeolum to chalazion is but a step, as the first named is an acute inflammation of the hair follicle and its surrounding tissues, the other a chronic inflammation of a meibomian gland rarely accompanied by pain. Chalazia have heretofore been considered to be retention cysts, the first stage of which was a plugging up of the gland duct and retention primarily of the normal, and then of a changed secretion.

Recent investigations have demonstrated that a true inflammatory process followed or was coincident with the sealing of the gland orifice. As soon as discussion began respecting the etiology of chalazion the wary bacteriologists hunted through their stock of unassigned microorganisms and handed out the *Bacillus xerosis* as the direct infecting agent. This microbe normally exists in the conjunctival sac and until an explanation is offered to account for the change from feeble to stronger pathogenic properties, oculists will be loth to accept this *ipse dixit* as conclusive evidence.

When chalazion becomes recurrent it is distinctly rheumatic in type. This opinion is founded upon clinical experience, which the history of the following case exemplifies:

The patient had submitted nine times to operation for the removal of chalazia and seemed still far from being relieved from further trouble, for three small elevations on his lids were slowly but regularly increasing. He was looking cheerlessly forward to future operations when he was

suddenly seized with rheumatic fever, his initial attack, which confined him to bed for days and to the house for weeks. Treatment was at once employed and on his recovery from the rheumatic attack he found that the lid tumors has entirely disappeared.

A few months later a small chalazion appeared on the lid, antirheumatic treatment was at once instituted and local massage with white precipitate ointment was regularly applied. Complete absorption of the enlargement supervened. The local treatment cannot be held responsible for the cure, because it was employed on every tumor previous to operation and in not one of them did it produce the slightest amelioration. This case is not an isolated one, as equally good results have been obtained so many times that when chalazion takes on the *recurrent* form I insist that antirheumatic medication and regimen be adopted. In the vast majority of cases a cure follows.

Do not infer from what has been said that I hold the rheumatic poison to be the sole exciting cause of chalazion, for such is not my opinion. Mechanical or inflammatory occlusion of the gland duct, cold, dust, burns, chronic blepharitis and optical defects may one or all be named as active participants or predisposing factors in producing this unsightly but innocuous condition. The influences just enumerated having been removed, controlled or eliminated and recurrence persisting, rheumatism is at the bottom of the trouble, and its treatment will eventuate in recovery; but this applies to small and recent growths where there is retention of secretion only, and possibly but slight epithelial hyperplasia. When, however, the tumor is materially enlarged, and is more or less firmly attached to the cartilage, proliferation of connective tissue has been added to altered epithelium and the gelatinous secretion has become purulent or mucopurulent, so that medicinal and dietetic treatment are unavailing, an operation is the only recourse.

There is a form of conjunctivitis rheumatic in its origin, which I call circumscribed bulbar conjunctivitis, the distinctive feature of which is that it is localized to the conjunctiva of the eyeball and never encroaches upon the membrane of the lid. It effects but one-half of the eyeballs and by preference the nasal sides. Since beginning this paper I have seen a case in which the temporal halves almost to the median line were involved. As in other forms of conjunctivitis the blood vessels were enlarged, tortuous, easily emptied on pressure and freely mobile. This type varies from other forms in that the discharge is watery, a mild, not profuse lacrimation, and is never mucopurulent nor purulent. This inflammation comes on without any prodrome, usually during the night, seems to follow exposure to a sudden lowering of the external temperature and must be considered as an occupation disease seeming to attack only those employed out of doors. Engineers engaged in constructing bridges, railways, subways, or electrical enterprises; architects supervising the erection of buildings; pilots and the ubiquitous book agent, seem to be the susceptible ones. My first case happened in the person of an engineer on the electric subway. I saw him three days after the trouble began. The general appearance, pain and inflammation were so acute and intense that a tentative diagnosis of episcleritis was made and treatment at once inaugurated, a strict antirheumatic course being adopted. Within three days the improvement was so conspicuous that only one opinion was tenable, namely, that the conjunctiva alone was affected. A few months later a second attack was experienced. General treatment was instituted within twenty-four hours from the inception of the trouble, no local treatment was employed and in about one week the cure was complete. About six months later his third attack came on, and before his physician reached him he was seized with an attack of acute articular rheumatism involving both knee-joints. There was considerable swelling and the suffering was intense. Before a single dose of medicine had been taken the conjunctival congestion localized to the nasal side of both eyeballs, spontaneously disappeared, and did not return during the course of the disease. It is to be borne in mind that this was his initial attack of rheumatism, for, excepting the two attacks of conjunctivitis, he had been free from any symptoms of rheumatism, never having suffered from even the muscular pains that are so generally experienced.

He has had two attacks of rheumatism since recovering from his first one, but in neither of these latter has there been any conjunctival implication. The appearances in this disease strongly resemble those observed in scleritis, but, being an innocuous ailment, it has none of the sinister portent that accompanies scleritis. Discriminating diagnosis can easily be made, provided the following points be observed:

CONJUNCTIVITIS.	SCLERITIS.
A feeling as if a foreign body were between the lids and the eyeball.	A feeling of fulness in both lids and eyeball, usually beginning in the eyeball.
No special tenderness of the eyeball.	Considerable degree of ciliary tenderness.
Neither elevation nor discoloration of the sclera.	Sclera elevated, the patch reddish in color going over to purplish in the centre.
Enlarged tortuous vessels, freely movable over the sclera and easily emptied on pressure.	Straight vessels like fine red threads in the elevated patch, not movable and but slightly changed in color on pressure. A few large tortuous vessels may be superimposed over the finer ones: this is not constant, but when they are present, the scleral vessels are conspicuous by contrast.

CONJUNCTIVITIS.	SCLERITIS.
Discharge watery.	Rarely any discharge.
Photophobia slight, if present.	More or less photophobia.
Pain, smarting in character.	Dull or aching pain, not neuralgic.

There is a variety of this disease restricted to the conjunctiva directly over the insertion of one of the recti muscles, which simulates scleritis so closely that mistakes in diagnosis are common, but if the points in differentiation just quoted be carefully observed accurate diagnosis presents no difficulty. This is the limited circumscribed bulbar conjunctivitis.

Finally, we come to striated keratitis, a rare disease, but of which I have seen several cases. In its appearance, to the unaided eye, it strongly resembles the striped keratitis that semi-occasionally follows cataract extraction, especially after tardy and difficult removal of the lens. In such cases the appearances are due either to a folding of decemets membrance or of the deeper layers of the flap. In striated keratitis of rheumatic origin the cornea assumes a grayish tint and very shortly thereafter grayish parallel lines appear, bisected at almost right angles by similar lines, producing a checkerboard appearance that is absolutely distinctive. Deep infiltration of the cornea follows, subsequent to which occurs the circumcorneal injection so suggestive of keratitis. At this stage the disease is easily mistaken for parenchymatous keratitis, but treatment applicable to this latter condition is without the slightest response, while a long continued antirheumatic course consisting of salicylates, iodides, baths, massage, etc., will bring about complete restoration.

This brings to a conclusion all that I have to say on the subject of external diseases of the eye due to rheumatism. From this paper has been omitted mention of chronic conjunctivitis of the rheumatic and gouty, corneal ulcers of middle and advanced life, scleritis and the other ocular diseases due to rheumatism, because they are fully described in text-books, whereas those that have been brought to your notice in this paper are conspicuous by their absence, no allusion whatever being made to them. Because of this omission I have brought this subject before you, as I wished to enter an earnest plea for the early recognition and diagnosis of this causative factor, in order that it should receive immediate treatment to prevent damage and in some cases disaster to sight.

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Glycogen in Leucocytes.—All former theories relative to the presence of glycogen in leucocytes have taken it for granted that the cells of the circulating blood are entirely free from this carbohydrate. A. Wolff (Zeitsch. f. klin. Med., Vol. 51, Nos. 5 and 6) shows, however, that if the vapors of iodine are allowed to act upon a still moist specimen of blood, every normal leucocyte will be found to contain glycogen. This glycogen is extremely soluble, and hence cannot be detected by the usual methods; as soon as the leucocytes leave the vessels it can be demonstrated.

RUPTURE OF THE SPLEEN: REPORT OF TWO CASES.*

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Rupture of the spleen, especially spontaneous rupture, is of such rare occurrence that I have thought that the two following cases occurring at the U. S. A. General Hospital, Presidio, San Francisco, Cal., might be of general interest and should be recorded. As showing how rare spontaneous rupture of the spleen is, especially in this country, Osler[1] states that no case of spontaneous rupture of this organ has been recorded here. The condition is said to be much more frequent in the Tropics, but it is to be noticed that writers upon tropical diseases, such as Manson[2] and Scheube,[3] in their classical works devoted to that subject do not mention this condition. Playfair,[4] however, states that in an experience of two and one-half years in the East Indies he observed 20 cases, but I have been unable to determine whether or no these were spontaneous in character. Strümpell,[5] in his text-book upon medicine, does not consider this subject at all, and Stengel,[6] writing upon the diseases of the spleen, devotes but two pages to this condition. Bovaird[7] cites a case of rupture of this organ in splenomegaly due to a slight fall upon the abdomen.

The condition is said to be most frequent during malarial infections, or in patients suffering from typhoid fever, or relapsing fever, and rare instances have been observed of rupture of the spleen in blood diseases, such as leucemia. I cannot believe that the rupture of this organ is of very common occurrence in malarial infections. The condition has never occurred in thousands of cases of malaria which I have personally observed, and in a study of the estivo-autumnal malarial infections[8] I have mentioned the occurrence of rupture of the spleen, but at the time of writing had never seen or been told of one instance by practitioners in malarial regions. Since then, Assistant Surgeon William P. Banta has informed me of a case under his care in Manila in which rupture of this organ occurred during a malarial infection, probably due to some violent movement of the patient, although this history cannot be clearly proven. That the condition, however, is a rare one, even in malarial infections, I believe there can be no doubt, and this is proven by the experience of lifelong students of malaria, such as Marchiafava and Bignami.[9] The latter authority observed a case in the person of a young man suffering from a relapse of estivo-autumnal malaria, who was suddenly seized with severe pain in the left side accompanied by symptoms of collapse, and ending in death in forty-eight hours. The autopsy showed a slight laceration of the capsule of the spleen, and the peritoneal cavity contained a large amount of blood. The same authorities quote

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two cases observed by Bastianelli, of patients suffering from pernicious malarial infections. In the first case the patient was brought to the hospital moribund, and at autopsy a large amount of blood was found in the peritoneal cavity and a large clot situated above the spleen. The capsule of the spleen was detached by the coagulated blood, but the laceration was small, and the severe hemorrhage was due to the fact that a medium-sized artery was perforated. In the second case, the patient was brought to the hospital in the same condition, and at autopsy the peritoneal cavity was found filled with blood and a laceration of the capsule of the spleen was found about two c.m. long. An examination of the organs and the blood in both these cases showed numerous malarial parasites of the estivo-autumnal variety.

The rupture may be spontaneous or due to mechanical violence but never occurs spontaneously in a healthy subject. Rupture due to mechanical violence, such as a severe fall upon the side or abdomen, may, of course, occur in health. Laceration of the spontaneous variety may occur at any portion of the capsule of the organ and may be single or multiple. The hemorrhage may be violent or very slight, according as the laceration is slight or severe. The laceration often occurs through the site of an infarct. The effused blood may entirely fill the abdominal cavity or may become encapsulated in the vicinity of the spleen or surrounding organs. Litten[10] describes cases in which the spleen being adherent to the stomach or intestines, and the rupture occurring in the adherent portions, the blood was effused into these organs.

The symptoms associated with rupture of the spleen vary in ratio as the laceration is slight or severe. In those cases in which the tear is of large extent the symptoms are those of a severe and rapidly fatal collapse. In other cases where the laceration may be very slight, the hemorrhage is slow and the symptoms of collapse develop very gradually. There is no reason to doubt that in some very slight lacerations recovery may take place, but in the vast majority of cases the condition is invariably fatal unless proper methods of treatment are pursued. In the two cases I shall describe, so far as the history can be obtained, the laceration was spontaneous. One of them occurred in the person of a patient suffering from typhoid fever. The other, and the most interesting, in a case of primary carcinoma of the liver with metastatic involvement of the lungs. For the clinical history in this case I am indebted to Assistant Surgeon Edward P. Rockhill, U. S. Army.

Case I. Rupture of the Spleen Occurring During Typhoid Fever.—H. W., twenty-three years old, birthplace, New York. Date of entrance to hospital, September 12, 1902. Previous history, not obtainable. The patient was a soldier returning from the Philippines on the U. S. Army Transport "Meade." His present illness began about eight days before admission, with headache, backache, and several slight chills. He stated that he had been feeling badly for about two weeks. Patient was diagnosed on the transport as a case of intermittent malarial fever. Upon admission, the symptoms chiefly complained of were headache, severe diarrhea, and tympanitic abdomen. The blood was examined September 12, 1902, and found negative for malaria. On September 15 Widal's reaction was requested and found positive, with a dilution of one in forty, in ten minutes. From this time until October 3 the patient ran a typical course of typhoid fever, and at this date his temperature had reached normal. In the clinical notes of the case on October 3, it is stated that that morning the patient felt cold and sleepy. His temperature became subnormal and there was slight delirium. On October 4, the temperature having remained subnormal, the patient complained of severe pain over the abdomen, especially in the left hypochondrium. This pain increased during October 5 and the patient presented all the symptoms of collapse, but not of very severe character. This condition persisted until October 7, when he became rapidly weaker during the afternoon of that day and complained of very severe pain over the whole abdomen. After six o'clock in the evening he became comatose; the pulse was imperceptible, the skin bedewed with cold perspiration, and death occurred at 11:40 P.M.

Autopsy.—Body considerably emaciated; rigor mortis, medium; finger nails congested; slight ante-mortem discoloration over the chest and abdomen; slight post-mortem discoloration over the dependent portions of the body; pupils slightly dilated, the right being the larger; finger nails slightly congested; weight, 110 pounds. *Abdominal cavity.*—Upon opening the abdomen the greater omentum was found adherent to the coils of the intestine by lymph and the small intestine was greatly dilated with gas and covered with purulent exudate. The coils of the intestines were adherent to one another. The abdominal cavity contained a considerable amount of purulent exudate. The appendix lay on the brim of the pelvis and appeared inflamed. The mesenteric glands were greatly enlarged. Upon removing the intestine in the region of the spleen, a large amount of blood was found confined to the region immediately surrounding the spleen, and upon examination of that organ a large laceration through the capsule was discovered at the lower portion, measuring about 3 cm. in length. The injury, however, was not confined entirely to this laceration, as the capsule of the spleen was removed over an area measuring 3 by 6 cm. and there was considerable laceration of the splenic substance. The organ measured 20 by 11 cm., was externally dark reddish-purple in color and the capsule was slightly wrinkled. Upon section, the surface was of a dark mahogany red color, the Malpighian corpuscles being indistinct. The organ was very greatly congested and it was found that the laceration extended for a distance of 1 cm. into the substance of the organ. The

pathological lesions found in the other organs were those common to typhoid fever. The large intestine showed a few old ulcerations, evidently dysenteric in character, which were almost healed. The ileum showed numerous typical typhoid ulcerations, and it was noted that some of these had nearly perforated, extending to the serus coat of the intestine.

This case is interesting in that the rupture was without doubt spontaneous, as the patient was so ill, having suffered a severe and long-continued typhoid infection, that he was confined to his bed and kept very quiet. It is hard to say just when the rupture occurred, although it is probably at the time he first complained of the severe pain in the side. The collection of blood would without doubt have become encapsulated had the patient survived long enough, and as it was, it was localized entirely in the region surrounding the spleen, there being no free blood elsewhere in the abdominal cavity. The question arises as to the etiology of the peritonitis which was present. It may have been, and probably was, due to the effusion of blood into the peritoneum, but it might have been caused by the extension of bacterial infection from the intestine, as several of the ulcers were simply separated from the abdominal cavity by the exceedingly thin serous coat of the intestine. Cultures were made from the spleen and resulted in a pure growth of the typhoid bacillus.

For the clinical history of the second case I am indebted to Dr. T. J. Strong, U. S. Army.

Case II. Rupture of the Spleen Associated with Primary Carcinoma of the Liver and Metastatic Carcinoma of the Lungs.—J. C., sixty years old; birthplace, Ireland. Date of entrance into hospital, February 6, 1903. History previous to admission presented nothing of interest beyond the fact that patient had suffered from malarial fever for fifteen years and had used alcoholics for twenty-five years. His present illness he dated from December 2, 1902, and claimed that it resulted from a fall which he received at that time. At any rate, he had been sick since this fall. Upon entrance to the hospital patient was found to be emaciated and complained of severe vomiting and pain in the right side below the ribs. He had almost complete anorexia. Upon examination it was found that he had severe edema of the abdomen, and that the liver reached six or eight inches below the ribs. The examination of the blood was negative, as was also that of the urine. From his alcoholic history and the enlargement of the liver, the case was diagnosed as chronic hypertrophic cirrhosis of the liver. During his stay in the hospital his symptoms were chiefly those already enumerated, *i.e.*, great weakness, anorexia and vomiting. Upon March 5, at 5 A.M., it was noticed that his breathing had become somewhat difficult, and death occurred very suddenly.

Autopsy.—Body considerably emaciated; skin of a yellowish color; rigor mortis absent; marked post-mortem discoloration over the dependent portions of the body. *Thoracic and Abdominal Cavities.*—Upon opening the abdominal cavity, it was found to be filled with blood. The liver reached 11 cm. below the border of the last rib and extended entirely across the abdomen, and was so large that it severely compressed the stomach and the spleen. Upon examination of the latter organ, a laceration of the capsule was found measuring 9 cm. in length. The stomach, pancreas, spleen and intestines were bathed with blood which had escaped from this laceration. Upon removing the organ it was found to measure 15 by 10 cm. The capsule was smooth and the organ a dark purplish-red in color externally. The laceration was situated along the upper border, and upon examination this portion was discovered to be involved in a large red infarct through which the laceration had occurred. A cyst was found closely associated with this infarct, measuring 1 cm. in diameter and filled with blood, thus showing that previous hemorrhage had occurred within the parenchyma of the organ. The consistence of the organ was almost diffluent.

Liver.—Considerable difficulty was experienced in removing the liver as it was adherent to the diaphragm, the stomach, and the spleen, and was so large as to almost fill the upper half of the abdomen. Upon examination the capsule was found to be smooth, although there were small nodules discretely scattered over it. Upon section of the organ, four large tumor masses were found which presented the typical appearance of carcinoma, the largest of these masses measuring 15 cm. in diameter. Only a small part of the liver tissue was not involved in the carcinomatous process. *Stomach.*—The stomach showed a very severe chronic gastritis, but there was no indication whatever of malignant disease, although this was looked for very carefully. The small intestine appeared normal save for intense congestion. *Pancreas.*—The pancreas was considerably congested, but otherwise normal. *Left Kidney.*—The left kidney measured 13 by 5½ cm. It was much congested externally. The capsule was smooth, there being no evidence of cystic formation. Upon section, the cut surface was found to be greatly congested. The cortex and pyramids were indistinct and the cortex thinner than normal. The mucous membrane of the pelvis was also much congested, and the consistence of the organ was increased. The capsule was not adherent. The right kidney presented the same appearance as the left. *Heart.*—The heart appeared normal. *Lungs.*—The pleural cavities were free from fluid. The left lung was adherent to the chest wall over its entire surface by old adhesions. The lung was crepitant in places but had a nodular feel. Upon section of the organ, it was found filled with small tumors, the largest not measuring over 1 cm. in diameter, and upon section these little masses presented the typical appearance of metastatic carcinoma. The right lung was adherent to the chest wall over its entire surface by old adhesions. The pleura was greatly thickened, and upon section the entire organ was

found invaded by metastatic growths which were evidently of carcinomatous nature. In both organs the small tumors showed here and there through the pleura.

Upon microscopical examination of sections from the tumors of the liver and lungs they were found to be of typical carcinomatous structure.

This case is of great interest in that it showed two very rare conditions: First, primary carcinoma of the liver; and, secondly, rupture of the spleen. The primary growths of the liver occurred in the form generally described as the massive form of primary carcinoma, and a study of the microscopical sections showed that there had been previously, without any doubt, a severe cirrhosis of the organ. The rupture of the spleen was, I believe, due to the pressure upon it of the greatly enlarged liver. That it was spontaneous —in the sense that it was not due to sudden movement—is, I believe, true, because the patient was so ill that he could hardly move in his bed. The substance of the spleen was very much decreased in consistence, and the fact that there was a large infarct just beneath the laceration, which involved it, would conduce to the occurrence of rupture by pressure, as the capsule over this infarct was much thinner than normal. In my mind, there can be no doubt that the spleen became wedged between the wall of the abdomen and the liver, and that the growth being gradual, the pressure hindered circulation in the upper portion of the organ, thus causing the infarct, and with this pressure continuing, a rupture occurred. I believe this is the only case on record in which rupture of the spleen was produced in this manner. The clinical symptoms in this case varied greatly from the one just previously described in that death was due to the enormous amount of hemorrhage from the large laceration, which took place suddenly, and caused almost instant collapse; whereas in the first case the laceration was of less extent, the hemorrhage more gradual, and the effusion of blood localized, thus prolonging the patient's life.

Microscopical examination of sections of the spleen in both cases did not show anything of interest beyond intense congestion, and in the latter case the ordinary pathological lesions of red infarct.

In closing, I would call attention to the great dificulty of diagnosing this condition. In the first case described the collapse would undoubtedly have been attributed to late perforation in typhoid, while in the latter case the condition was so rapidly fatal that the diagnosis could not have been reached. In cases of malaria, however, in which there is sudden or gradual collapse, a diagnosis could be more easily made, and this condition should always be thought of should such symptoms develop. It is safe to say, however, that very few cases of rupture of the spleen are diagnosed before death.

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SOME FEATURES OF RENAL TUBERCULOSIS.

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In this brief paper I shall outline for our discussion the aspects of diagnosis and treatment of renal tuberculosis and shall aim at presenting the diagnostic features in relatively early cases.

The history alone in the case of any new patient is ordinarily enough to awaken suspicion that we are dealing with the disease under consideration. The answer to our first question, "Of what do you complain?" is usually sufficient to give a clue when the patient replies: "I am annoyed by passing my water so often." Tabulating the anamnesis of this patient in regular order, its review, together with fifteen or twenty others where the same disease has existed, will afford a composite picture of the following sort:

The patient is a male or female, of an age from twenty to thirty-five years. The family history shows that one or the other parent died of consumption. Not unlikely a brother or sister has or has had some of the chronic manifestations of tuberculosis. The personal history tends toward revealing a past story of more or less ill health, although exceptions to this are noticeable. The present complaint dates from and is remembered in association with some prolonged muscular effort where exposure to wet or cold occurred at the same time, more or less of a chilling resulted, followed by some fever, and the first frequency of micturation was then noticed. Many of the cases had, a few months before, met with a fall or some kind of injury involving one or the other lumbar region, and the place has been somewhat sensitive ever since. When the patient was first bothered with frequency, this symptom lasted only a week or ten days, followed by a seemingly normal condition of the bladder. Another attack, some two months later, associated with mild fibrile state, malaise, and loss of appetite, led the attending physician to diagnose malaria and treat the case as such. After improvement in the constitutional symptoms, the pollakiuria this time continued longer than before, and the patient now for the first time paid some attention to the appearance of the urine, as it was caught in a glass vessel; the fluid in the majority of cases had a mild opacity, like milk-tinted water, in a few instances the patient observed, a slight reddish tinge which suggested a possible admixture of blood. There was never any real pain connected with urination, but a moderate intimation of discomfort in the suprapubic region, and the annoyance of having to get up at night for micturition, which was just as compulsory at regular intervals as during the day. A very few of the

patients have at times had such severe pain in the loins and down the side, accompanied by nausea and vomiting, as to make their medical attendant diagnose renal colic of calculus or gravel origin. The degree of pollakiuria in the majority of the patients amounts to emptying the bladder every two hours.

We are now ready to make our own observations in any of the foregoing cases. It is seen that the patient is usually poorly nourished, but even if rotund and well muscled the color is faulty. Temperature is a degree or so above the normal. Bimanual palpation over the loins gives a tenderness on one side or the other, even if the kidney is not palpable. In the female cases we do not attach too much importance to the presence of a palpable and tender kidney on the right side, even after we have established the diagnosis of urinary tuberculosis, for the left organ may be the seat of the disease and yet not palpable nor so tender as is the commonly prolapsed but otherwise healthy right gland.

Instead of being satisfied with the urinary specimen which the patient has perhaps brought, request is made that the bladder be now emptied in two glasses. This gross inspection of the just voided fluid may be of considerable value in supporting our suspicions as to the nature of the case with which we are dealing. At any rate we do not fail to examine microscopically a drop of the sediment in the fluid state. If every field is made up of few or many leucocytes with practically no other ingredient, and particularly if micro-organisms are conspicuously absent, the suspicion of tuberculosis is increased. Several slides of the sediment are now dried and stained for tubercle bacilli. If in the faintly blue field we find an occasional minute granule holding the red fuchsin stain, whatever these spore-like bodies are, they may reasonably serve to encourage the expectation that ere long two or three typically arranged tubercle bacilli will be met. When found we may be pretty sure of the diagnosis, but before risking the announcement to the patient it is well to get another specimen by means of a sterile catheter and thus avoid a possible contamination of the urine by the smegma bacillus which tends, both morphologically and in the staining reaction, to resemble the tubercle bacillus. On again finding the same microorganisms after such exclusion of smegma bacilli we are prepared to tell the patient that it is necessary to determine the source or sources of these consumptive germs, for as yet we are wholly unable to give advice as to future treatment, not knowing whether the bacilli come from a vesical or renal lesion, and if of the latter origin, from which side.

The fact that one kidney is palpable and tender does not justify the conclusion that it is the seat of the disease. To determine this question the catheterizing cystoscope is brought into use. Up to this point we have been depicting the physical signs and symptoms of a renal tuberculosis which started in the cortex or parenchyma of the gland, in other words a tuberculous implantation of hemotogenous origin, and not the much rarer form of the disease where a tuberculous pyelitis or pyelonephritis, secondary to ureteric extension of a bladder tuberculosis, has occurred. Consequently the conditions to be expected when we now employ the catheterizing cystoscope are those which go with the mildest sort of tuberculous vesical involvement if any. Even here the bladder is at best somewhat hyperesthetic and as generous an anesthetization with cocaine or eucaine as is consistent with safety should be employed.

The limits of this paper will not permit us to consider even a few of the many interesting points connected with the technic of this examination test, nor the various conditions which the bladder may present. It must suffice to allude to that almost pathognomonic appearance of the ureter mouth, which was first graphically described by Willy Meyer as accompanying a renal tuberculosis on the same side. This consists of an odematus pouting or even a prolapse of its mucous membrane with more or less erosive and hyperemic lesion on part of its periphery. But I have had occasion to demonstrate in two cases that the ureter mouth associated with a tuberculous kidney may appear as normal as its fellow. Occasionally a turbidity, due to blood or pus, can be noted in the fluid issuing from the ureter. But of vastly more importance in reaching a positive diagnosis and of gaining an operative prognosis is the evidence to be derived from examination of the separate urines of the two kidneys. And this is secured by the ureter catheters which are now inserted by the same instrument. The eye of each catheter rests at a point about two inches within the mouth of its respective ureter.

We shall be obliged to pass over the varied behavior of the normal and the diseased kidney during the collection of their excretions, remarking only that the fluids seen in these collecting bottles here attached to the cystoscope represent the gross appearances and show the contrast ordinarily met in synchronous ureter catheterization, where one kidney is healthy and the other the seat of tuberculosis.

If up to the time of this test, despite suspicions of renal tuberculosis, all previous examinations of the voluntarily voided urine have failed to show tubercle bacilli, it is now well to allow some drops of urine from each ureter catheter to fall into separate culture tubes of different media, and also, to collect enough additional urine from each gland to permit of guinea-pig inoculations.

When the diagnosis of unilateral renal tuberculosis is satisfactorily established and evidence of similar foci in other organs is absent, the most debated question, namely, that of treatment, is now to be met. We must here be content with the brief and general statement that for the majority of cases the best outlook lies in a nephrectomy and, if possible, a change of air and an improved hygiene of a month or two should anticipate the operation. In exceptional instances much more extended resource to the same measures and periodical oversight by the same medi-

cal adviser may very rarely be attended by the happy results of a disappearance of tubercle bacilli and all the original symptoms.

Nephrectomy for tuberculosis should always be done extraperitoneally, no matter what incision is selected to approach the kidney. Different indications, such as the size and position of the organ, as well as conformation of the patient in individual cases, besides the views of different surgeons as to how much or how little of the ureter is to be removed with the kidney, are the determining factors in regard to whether the incision be a lumbar, an anterior vertical or a subcostal one. Again various combinations of any of the three are also commonly employed. Briefly stated it may be said that the first mentioned operation is suited to small kidneys, where only an inch or two of the ureter will be removed; that the second supplemented by more or less of a right-angled cut extending outward is well adapted for ureteric management; and the third meets the requirements in many average cases. The two last mentioned incisions do away with the necessity of maintaining the patient in a flexed lateral posture where the well kidney is sure to be more or less compressed by the body weight against the underlying sand bags or air cushions. Whatever incision is employed, after the cutaneous and muscular wound is well advanced and all vessels ligated, the transversalis fascia is severed at the posterior angle of the wound, the perirenal fat appears and two fingers are inserted and directed anteriorly to strip the parietal peritoneum so that it falls toward the median line, the knife follows at a safe distance from this receding tunic. The ureter is now sought by the finger and its condition tested. In the majority of cases its division three inches from its renal attachment will suffice.

To prevent tissue soiling when this is done gauze is led under the duct about which a single ligature is now tied on its renal side, while a pair of pressure forceps are applied to its periphery on the vesical side. The soiled scissors are discarded after cutting the ureter, between the ligature and forceps, and the mucous lumen of both ends cauterized, that of its distal end is cauterized to the distance of half an inch or more, by insertion of the small platinum point. If not easily accessible for the actual cautery, a small swab, moistened with a strong carbolic solution, is twisted into the ureter for a short distance. I generally use a very small curette for denuding the mucosa of the distal end. After the lining has been treated, by any of these means, so as to insure a subsequent coalescence of the tube at or below the point of ligature a knot of chromicized catgut is tied. I am well satisfied that when extra precautions of this kind are not taken to secure adhesive occlusion of the ureter, the ligature alone will prove inadequate in preventing leakage upward from the bladder in fully thirty per cent. of nephrectomies. We have been too prone to ascribe to the vesical outlet of the ureter great sphincteric powers. While such a muscular mechanism may pertain and be thoroughly adequate in the normal organ the vast majority of cases requiring nephrectomy for disease have a corresponding ureter which has undergone pathological changes at some point in its continuity, most probably at its vesical termination, as can so commonly be seen at the time of a preliminary cystoscopic examination.

The ureter having now been disposed of, the remaining part of the pedicle receives attention. When accessible for the purpose separate chromicized catgut ligatures are placed upon the large vessels, and the kidney cut loose. Not uncommonly the size of the kidney and its liability to rupture, or the indurated condition of the attached part of the ureter, will make it easier to seize the pedicle as a whole, with one or several clamps, then cut the kidney free before isolating the vessels for ligation. Under such circumstances, however, although the space occupied by the kidney has been gained, the marked retractile tendency of the pedicle besides being more or less anatomically distorted and concealed by the clamps, makes separation of the vessels for ligation now quite as difficult as before. Since the renal artery can nearly always be readily identified by its pulsation, I like to get a well-placed ligature at least on this one vessel before separating the kidney, even if the other vessels are intrusted to clamps until after the kidney is detached.

HOOKWORM DISEASE AND MINERS' ANEMIA IN THE ANTHRACITE COAL FIELDS.*

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It has been known for a number of years that there is a certain severe and widespread disease among European coal miners, known as miners' anemia, which is caused by the intestinal parasite, *Anchylostoma duodenale* or hookworm. The disease is, therefore, communicable and in some mines has spread to 95 per cent. of the men employed.

So much has recently appeared in American medical literature on the general aspects of hookworm disease, on its mode of spreading, and its symptomatology, that in the present contribution only those phases of the disease especially connected with mining will be taken up.

The old world variety of the parasite was discovered in Italy by Dubini in 1843. A short time afterward, the worm was shown to be the cause of the so-called Egyptian chlorosis and, later still, to be the cause of an epidemic anemia in Brazil. The disease, however, did not attract much attention until work was begun on the St. Gothard tunnel. Here it was observed that the

* Studies from the clinical laboratory of the Moses Taylor Hospital.

Italian workers in large numbers suffered from a disease marked by anemia and general debility by which many were incapacitated for work. Perroncito and others investigating this malady found that it was due to this same parasite of Dubini and that the tunnel workers were infected to a very large degree. In a few years it was spread by returning workers all over Italy.

These Italian laborers are supposed to have first carried the disease into the Hungarian coal mines. Here it spread until at present in some of the mines, as for instance in the Chemnitz district, 95 per cent of the miners are infected. From Hungary, the disease spread to Germany. It is said that in the district of Westphalia there are about 25,000 miners affected. At a meeting of miners' representatives from all coal-mining countries of Europe, held in Brussels in 1902, this subject was especially discussed by the German delegates, who claimed that, as the result of the ravages of this parasite, the average duration of a miner's life has fallen from forty-five to forty years since 1896.

From Germany, the disease is supposed to have reached Belgium. Romme[1] states that in Belgium the Institute Bacteriologique found that among 10,000 miners examined, 55 per cent. were infected. The affection has been so serious in Belgium that at Liege it has been found necessary to establish a special dispensary for the treatment of anchylostomiasis. This, with improved sanitary arrangements at the mines, has considerably reduced its prevalence in this country.

In France, the situation is a little less clear. Breton,[2] of the Pasteur Institute of Lille, states that in the Loire basin five per cent. of the miners are infected and at St. Etienne about two per cent. Breton further makes the interesting statement that Halle in 1802 described an epidemic form of anemia among the miners at Anzin, France, which corresponds exactly to anchylostomiasis. It was attributed to bad ventilation. In 1875, a medical society in the Loire basin also investigated a form of anemia and came to a like conclusion. Riembault,[3] too, writing in 1861, described a disease closely resembling anchylostomiasis which he called *anemia d'Anzin* and considered to be epidemic. Breton believes that the extent of the disease in France was formerly much greater than at present, and that it has been reduced to the proportions he indicates. Recently, however, the French Service des Mines stated as a result of an inquiry of their own that the disease is not present in the French mines. This conclusion seems improbable and is discountenanced by Breton.

In England the situation is very interesting. Boycott and Haldane[4] have investigated a widespread form of anemia present in the Dolcoath mine in Cornwall. These observers consider that practically all of the seven hundred underground workers are infected with anchylostoma. They found the ova in the stools of 38 out of 46 miners examined. They believe that the disease was introduced into the Dolcoath from the Colonies, probably South Africa, and that it has been spreading through the mine for about eight years. The Dolcoath is a metalliferous (tin) mine, but the physical conditions, so far as this worm is concerned, are practically the same as in coal-mines. Thorough examination of other mines in England have not as yet been reported.

Stockman[5] reports a case in a coal-miner, in Lanarkshire, Scotland. This man had previously served two years in the army in India, and undoubtedly contracted the disease there.

The spread of this parasite through mining regions is easily accounted for by the life history of the worm itself and the sanitary conditions favoring it in practically all mines. The infectious material is of course fecal matter. This in many cases contains innumerable ova. When the fecal matter is deposited on the ground under favorable conditions, the ova develop into larvæ which are infectious for men. These larvæ when taken into the mouth develop again into the adult organism. There are certain physical conditions for the development of the eggs which the mines supply very nicely. The eggs require a temperature of 20° to 40° C. and a certain amount of moisture. Bruns[6] has shown that in German and Hungarian mines where the underground temperature is from 25° to 30° C. the disease is prevalent. In other mines having a temperature of 19° to 20° C., the disease is very infrequent or entirely absent. The temperature of our anthracite mines generally ranges from 25° to 40° C. The coal dust lying in the mines forms a very good material in which the eggs can grow. In fact, Goldman[7] and Loos, quoted by Goldman, used coal dust or charcoal to develop the ova experimentally.

The peculiar sanitary conditions which favor the spread of the parasite are these. None of the anthracite mines in this country and only a few coal-mines in Europe, have any privy facilities under ground. The men deposit their excreta in any chamber or gangway handy. If any of the men have the disease, the eggs in their feces will develop, and another man stepping into this material will get some of the infectious larvæ on his boots and transmit them to his hands and then to his mouth. Or, a man can directly contaminate his hands while at work and easily transmit the larvæ to his food, especially if, as is often the case, the worker eats his dinner in the mine, without, of course, washing his hands. The man may not only infect himself in this way, but also may take home the infectious material to his family, as has frequently been observed in Europe. In many of the European mines where ladders are still used to a considerable extent, the possibility of infection is very intimate. A miner walking in infected fecal matter scrapes it off on the rounds of the ladder as he ascends and another miner directly soils his hands in climbing after him. In our anthracite mines, ladders are very seldom used, so that this one element of danger is not present. There is considerable evidence now that the larvæ some times gain en-

trance through the skin. If this mode of infection is possible, it is not the important one in the case of miners.

While several American clinical observers have described a form of anemia closely corresponding to that caused by this parasite, it was not until 1893 that Blickhelm first recognized the true nature of a case in the United States. From this time up to 1892, about 35 cases had been recorded, according to Stiles, in various parts of the United States, some being found in northern cities, such as Philadelphia, Albany, Buffalo, and St. Louis. It was not until 1902, however, that Charles Wardell Stiles,[8] of the United States Public Health and Marine Hospital Service, showed by a series of interesting observations that the disease is very widespread in all our Southern States and that it is due to a different variety of the same parasite that causes the disease in Europe. This variety Stiles had discovered a short time previously and called *Uncinaria Americana*. Further reports now show that the disease is also very widespread in Porto Rico, Cuba, the Philippines and Hawaii.

The wide extent of this disease, then, in foreign coal-mines, in our Southern States, and in our insular possessions makes an inquiry as to its presence in our own coal-mines of some importance. Stiles apparently first drew attention to the great economic meaning of this parasite which won for it in the lay press the somewhat significant title of the "bacillus of laziness." He showed how marked an influence this blood-sucking parasite must have on the productive power of a large portion of our Southern whites. This factor is already being felt in European mines and if this disease is present or threatens our coal-mines its economic importance is great.

We have, then, a disease which tends very particularly to spread through mines, and one which is already very prevalent in countries from which many immigrants come directly to our coal-mines. Further, we know that the disease is widespread in our own Southern States and that it is sometimes found, generally in imported cases, in our Northern cities. Sonsino, quoted by Perroncito, gives 50° 31′ north and 30° 5′ south latitude as the limits in which the disease may be found. Furthermore, it is very prevalent in our islands and is frequently brought to us by returning soldiers. Garrison, Ransom, and Stevenson,[9] found the hookworm in 10 out of 59 examinations of returned Philippine soldiers. The same may be said of the soldiers returning from Porto Rico. Ashford and King[10] consider that 90 per cent. of the agricultural people and 50 per cent. of the city dwellers in Porto Rico have hookworm disease.

Goldman and Bruns have shown that the worms live in their human host for an average of six years, so that for this time every infected immigrant or returning soldier is a possible focus of infection.

It is evident, then, simply from this brief review of the literature of the subject, that, if this disease has not already spread among our coal-mines, its introduction is only a question of time. Stiles has already found one case in a miner in South Carolina. This case, however, does not throw very much light on the disease as connected with mines as the worm is so generally distributed in this State.

In order to obtain some definite information on this subject, we have examined the stools of 400 anthracite mine workers. These specimens have been collected from such widely separated cities as Scranton, Carbondale, Forest City, Pittston, Wilkesbarre, Kingston, Sandy Run, Hazleton, and Lansford. At fifteen mines from 10 to 40 specimens were examined, while the rest were from single cases, as they were found in various miners' hospitals, and therefore widely scattered through many mines. The nationalities examined included all the mixed population found in our coal fields, *i.e.*, Welsh, German, Hungarian, Italian, Russian and German Poles, Lithuanians, Magyars, Slavs, etc. The usual technic for this work was followed—ten cover slips being examined in every case before a negative finding was accepted.

Out of all this number (400) the hookworm ova were found only once. This case was a miner in Scranton, but, unfortunately, through a mistake in labels made by one of the miners, the man himself could not be traced. Stiles, who kindly examined this specimen for us, considered that the ova belonged to the old world variety. Fifty other men were examined at the same mine with negative results.

Another almost equally important finding was the larvæ of *Strongyloides intestinalis, i.e.*, the organism of Cochin China diarrhea. This occurred in a native of Russian Poland in our own wards. He had been a farm-hand in the old country and had been in the United States only a few days before an accident brought him to the hospital so that the organism must have been imported with the patient. He was also infected with *Ascaris lumbricoides* and *Trichuris trichiuria*. He had no anemia or history of diarrhea. This is, so far as we can discover, the first time that either the hookworm or *Strongyloides intestinalis* has been found in the anthracite coal fields. Boggess found the ova in an Italian brickmaker, who had been working in the soft coal fields of Pennsylvania for one month.

The exact clinical and economic singificance of *Strongyloides intestinalis* has not been made out. Perroncito[11] and others frequently found the organism among the workers at the St. Gothard tunnel, both alone and associated with *Anchylostoma duodenale*. Perroncito was of the opinion that the *Strongyloides intestinalis* could of itself produce an anemia. Thayer considers that this idea is disproven and that the parasite may, under certain circumstances, infest man with no harm, while, under other circumstances, it may cause a chronic, wasting diarrhea.

Our knowledge of *Strongyloides intestinalis* in the United States is very limited. It was not until 1901 that Thayer[12] reported the first three cases

found here. Moore described what he considered the fourth case in *American Medicine*, for May 30, 1903. Brown, however, had published an account of three other cases in the *Boston Medical and Surgical Journal* for May 28, 1903. During the year 1903, a number of other cases were reported in the United States, and it is very probable that the parasite is much more widespread than has formerly been considered the case.

It is of interest to note in passing that, among the 400 miners examined, we found 44 different parasitic infections, as follows:

Hookworm	1
Ascaris lumbricoides	15
Trichuris trichiuria	24
Oxyuris vermicularis	3
Strongyloides intestinalis	1
Total	44

This infection was distributed among 37 individuals, as in seven the ascaris and trichuris occurred together. This figure, about ten per cent. of cases, is about the same as Garrison, Ransom, and Stevenson found among soldiers before the Spanish War and is probably a fair average for a working population. The incidence of parasites, however, varies in different nationalities. Thus, of six Italians, railroad laborers at Scranton (not included in the above 400), all were found to harbor parasites, two having *Ascaris*, two having *Trichuris*, and two having both. Recently, an Italian in our wards was relieved of eight round worms and also contained the *Trichuris*. It is probable that, in general, infection with *Trichuris trichiuria* is slightly higher than here shown, as the ova are often very scarce. In some cases, we found only one or two ova in ten slides examined. The ova of the round worm on the other hand are generally so numerous as not to be easily overlooked. In one case we counted 49 round worm ova under a three-quarter inch cover glass. In our own hospital wards, containing as they do a very large foreign element, we can demonstrate a case or two of round or whipworm nearly any time we so desire.

So far, then, as this inquiry has gone, it would show that the hookworm has not obtained much foothold among our anthracite miners, although its presence to a certain extent is demonstrated. The material so far collected, however, does not allow of a definite knowledge of the facts. Hence a much wider search is being carried on. It is possible, of course, as the work progresses, that a single mine may be found, as the Dolcoath mine in England, where the disease has spread extensively and where remedial measures will be necessary.

One interesting finding in this connection is the fact that practically all the mine mules are infected with an organism so closely allied to the human parasite that it can be inferred from its constant presence in mules that our mines present favorable conditions for this family of worms. It is not probable that the mule organisms are transferable from the animals to men. We have not succeeded in infecting guinea-pigs with this worm from the mule, and we have examined five mine-rats' stools without finding anything except a variety of tapeworm.

In any event, the danger of this disease coming into our coal-mines is great, and, when once established, its effect on diminishing the earning power and probably also reducing the average length of life makes it a very important question, for both miners and employers. However, no aid in keeping out the disease can be expected from the miners. Many individual workers have strongly objected to the present inquiry among them and have refused to send specimens. And, too, our miners are so negligent of the rules to prevent the most immediate serious accidents that they cannot be expected to interest themselves in the prevention of a disease so unsubstantial that even a physician has to use a microscope to find it.

The only way probably by which the disease can be kept out of anthracite mines is, as has been suggested by Stiles, for either the State Bureau of Mines or Health to have the stools of newly employed miners carefully examined. The expense of this method will probably prevent its ever being employed as a distinctly prophylactic measure, though the serious economic loss to the state when the disease does become extensive would amply justify it.

We wish to thank Dr. Stiles for verifying our finding of the hookworm and *Strongloides intestinalis*.

The American and foreign literature on *Anchylostoma* is now very large. Appended are a few references of more importance in regard to the mining industries.

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Bubonic Plague Spreading.—The bubonic plague is spreading in an alarming fashion along the west coast of South America. The State Department received a cable dispatch last Wednesday from United States Minister Wilson at Santiago de Chili, that the plague had broken out at Antofagasta. This is one of the most important shipping ports on the west coast north of Valparaiso. The Public Health and Marine Hospital Service will be advised, so that suitable precautions may be taken at quarantine.

WHEN AND HOW SHALL WE OPERATE FOR OBSTRUCTING HYPERTROPHY OF THE PROSTATE GLAND?*

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As a discussion on the treatment of the various phases of obstructing hypertrophy of the prostate gland is the evident purpose of this meeting, it has seemed to the reader that he can perhaps do his share in opening such a discussion, in no better way than by presenting a brief formulation of his own experience and beliefs relating to the question under consideration. Such a brief résumé is all that this paper will attempt, and it has seemed best that he shall confine himself to a consideration of the indications for the various forms of treatment, making little reference to the technic of the various operative procedures at our disposal. The title of these remarks, therefore, is, "When and how shall we operate for obstructing hypertrophy of the prostate gland?"

In the first place let us consider the "when." As far as prostatic surgery is concerned the last decade seems to have been an era of technical progress which has resulted in the development of a variety of operative procedures, and it may now fairly be said that not only are operations for the radical removal of obstructing prostatic masses easily possible, but that they are possible with a surprisingly small traumatism to structures contained in the prostate gland and contiguous to it. If the literature of these years may be taken as an indication of the trend of progress, it at least surely indicates that such progress has been along the line of surgical technic, and after reviewing it, one might almost be excused for inferring that all prostates ought to be removed after the onset of troublesome symptoms, with the same prompt alacrity which characterizes our attitude toward the troublesome appendix. This is, of course, far from being the case, and even the most radical among us will probably, up to a certain point, concede to the catheter much the same place in prostatic therapeutics which it has always held. Its usefulness is as great as ever, greater, in fact, for its better construction and its more varied form make its possibilities for palliation more extended than ever before; and it probably meets the necessities of a wider range of prostatic sufferers than is palliated or cured by any other one procedure. This I believe to be true now, and probably always will be true.

The catheter is useful "up to a certain point." Then its further use becomes abuse, and unnecessary abuse, for the last few years have developed for us various measures which render such catheter abuse no longer necessary, as it was a quarter of a century ago. Where, then, is that "certain point" up to which the catheter is useful? There is a class of prostatic patients in whom the obstruction has reached a point where it is necessary to empty the bladder one or more times daily, and yet where, because of the patient's ignorance or of the lack of decency and cleanliness in his surroundings, it seems manifestly impossible to institute a proper routine use of the catheter. There is another class of cases where daily emptyings of the bladder are necessary and where the patients are absolutely unwilling to embark upon a catheter life, preferring to take the immediate risks of an operation rather than to incur the tiresome routine and more remote dangers of a catheter existence. Both of these classes are not only proper subjects for radical operation, but usually offer the most favorable conditions for such a procedure, as they are taken so early in the development of the obstructive symptoms; and the writer has several times enucleated obstructing prostatic masses from patients of this kind without making any previous attempt at catheter palliation.

There remains, however, a very large class of cases, many of them absolutely and obviously unfit subjects for operative measures, and all of them easily made comfortable for the time being by the routine use of the catheter. If such patients are properly supervised and cared for during the time when catheter life is being instituted, and up to the time when the urethra and bladder have acclimatized themselves to the new conditions of a catheter existence, they will often go through their lives with a sufficient degree of comfort and an ever-decreasing risk to the integrity of the bladder and kidneys. These are the cases which can properly be treated by the catheter, and so long as these conditions of comfort with steadily decreasing risk of infection pertain, the catheter remains the proper means of palliation. When for any reason these conditions are no longer possible and the catheter ceases to be an easy and efficient palliation, we reach that "certain point" where its use ends and its abuse begins. That is the moment when operative relief should be sought—then, at once—and not after months or years of exhausting struggle, to avoid an operation which was apparently unavoidable when the catheter ceased to palliate; a struggle carried on at the expense of pain, exhaustion and deterioration of the involved organs, even to an extent sufficient to materially lessen the prospects of a favorable outcome. So much for the "when."

Now let us consider with equal brevity "how" these cases shall be operated upon when the necessity for an operation has once been decided. Since Mr. Arthur McGill, of Leeds, published his cases of suprapubic prostatectomy, in 1888, the surgical world has been actively interested in prostatic surgery, and during the fifteen years just passed much progress has been made and much valuable experience accumulated. Prostatectomy, from being a slow, bloody, and inaccurate procedure carried out by the aid of cumbersome instruments, for the most part in the dark, has come to be a quick process of enuclea-

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tion accurately performed under the guidance of the surgeon's visual, as well as tactile, sense. These technical improvements in the forms of operation have been marked enough to lessen materially the mortality of the procedure, and yet, surgeons have been so engrossed with the technic of the operation, and have been so satisfied with the technical advances made, that cases for operation have many times been chosen with a lamentable lack of discrimination, and we are at the present moment quite unprepared to state just how great, in properly selected cases, the real dangers of these radical operations are.

In short, it would seem to the writer that the real problem in radical prostatic surgery at this moment is the selection of the proper case, rather than the selection of this or that method of operation. Certainly few elderly men are good surgical risks and few surgeons are in the habit of performing operations of any severity upon such patients unless they be operations of real necessity rather than those of expediency. Prostatectomy no longer offers the formidable 15 to 20 per cent. mortality which it did a few years ago, but it is and must always be a serious and dangerous procedure, to be offered only to patients who are fair surgical risks, for other less serious measures for the promotion of comfort and the palliation of pain are within our reach as alternatives for the very large class of cases obviously unfit or unwilling to take an anesthetic and undergo an operation of importance. There are many prostatics whose obstructive symptoms develop at so early an age and who reach the limits of palliative treatment so early in the history of their troubles that operation becomes a necessity while they are still comparatively vigorous men in good physical condition. There are others, older men, who, in spite of advancing years, maintain the physical characteristics of those much younger than themselves. These are the cases for prostatectomy, and while it is very difficult to describe accurately just which cases come into this class, and while it is certainly impossible to take the age of the patient as the guide to such classification, the decision will be readily enough reached in any individual instance, provided the surgeon always realizes that he has another alternative for that case, if he does not quite like to assume the risks of a radical operation.

It is, then, the writer's firm belief that while prostatectomy is always the method of choice when possible, because it is the only operation which really offers a prospect of cure, and while there is a large class of patients upon whom it may properly be performed, still those cases form a comparatively small percentage of the total number demanding relief; and while the future developments of the operation will undoubtedly increase its effectiveness and will diminish its mortality, that mortality will be decreased to an even greater extent by a proper discrimination in the choice of cases for operation, a discrimination which has not pertained up to the present time. There remains, then, another large class of cases, if the writer's estimate of the conditions be a true one, who are, obviously, unfit surgical subjects and many of whom are running an unjustifiable risk merely in the taking of an anesthetic, and yet palliative treatment with the catheter is no longer possible or has never been possible for them. What is to be done for them?

It is impossible to study the experience of the last few years with the Bottini operation and its modifications without realizing that whatever may be the scope and degree of its usefulness, it is certainly a far safer procedure than the more radical operations. The writer has been for years very skeptical as to its usefulness and occupied the very irrational position of those who, while having no personal experience with the operation, still condemned and did not use it. The following case compelled an interest in the operation which further experience has developed into the conviction that it has a wide field of usefulness. The patient in question was under ether anesthesia for a prostatectomy which was to be carried out in the hope of relieving a condition which had resisted all efforts at palliation. The man was an unfit surgical risk and, shortly after full etherization was attained, collapsed, and the operation had to be discontinued. A few weeks later, under local anesthesia with four per cent. cocaine and with the Bottini instrument as modified by Young, of Baltimore, three incisions were made. There was practically no period of convalescence, and in forty-eight hours the man was passing his urine sufficiently for his own comfort. He is now, a year or more later, doing his day's work, using no catheter, and his bladder contains only a few drams of residual urine.

Further experience with the operation has increased the writer's belief in it. It must of necessity be a far less certain procedure than prostatectomy and it must always be regarded as a palliative measure resorted to in cases where the more radical operation is not safe; but with every recognition of the limitations of the use of the cystoscope in such cases it seems to me that cystoscopic and other instrumental examination will usually give the operator a sufficiently accurate idea of the conditions, to make the operation anything but the "step in the dark," which so many surgeons choose to characterize it. I also believe that the interchangeable knives of the instrument, as modified by Young, make the operation safer, as well as more accurate. My idea of the operation, then, is that it is attended with little risk to life because it needs no general anesthetic and because it has so short a period of convalescence; and, while its results are less certain than those of prostatectomy, they offer the patient a prospect of such a degree of improvement as shall at least do away with any further necessity for the systematic use of the catheter, and to give the operation a large field of usefulness in cases where prostatectomy cannot be safely carried out. I also believe that these cases

form a far larger class than those suitable for prostatectomy.

The writer is quite aware that these remarks are merely statements of his own personal experience and convictions and they must be so taken. If they meet with favor, they may at least serve to coordinate and arrange the ideas of other writers. If they do not represent the beliefs of others, they will serve all the better to promote the discussion, which is the object of this meeting. The points which these remarks desire to emphasize are:

(1) That the catheter has as wide a range of usefulness as it ever had, in the palliation of obstructing prostatic hypertrophy.

(2) That the various operative procedures at present at our command are to be resorted to, with the exception of certain small classes of cases referred to in these remarks, after the catheter has ceased to palliate.

(3) That the time for this operative interference is at the moment when the catheter has ceased to palliate and not after months or years of further and unavailing struggle to make it do so.

(4) That the more radical operation of enucleation, on the one hand, and the Bottini operation with its various modifications on the other, are not procedures of the same kind, do not have the same object in view, and are in no sense to be weighed in the balance, the one class against the other. They should rather be contrasted, the one class as radical operations aiming at a cure, and the other as efficient palliating procedures, each having its own distinct indications for its appropriate use.

REFLECTIONS ON THE SURGERY OF PROSTATIC HYPERTROPHY.

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In this paper, I shall simply describe the methods that I now employ in the treatment of patients suffering from hypertrophy of the prostate gland and its sequlæ. I shall not discuss the various operative procedures that have been recommended for the relief of prostatic hypertrophy; neither shall I consider the advice given by various authorities or the many theories and operative procedures elaborated by them. My excuse for giving my personal experiences to the profession—when that experience is so limited—is that the great majority of the recent original articles, although full of advice and methods, are practically without the relation of actual experiences and the detailed reports of cases. I should be pleased to see a report, from several of our representative surgeons, stating briefly the condition of the patients when they applied for treatment, what was done for them, and the result obtained.

I am of the opinion that infection is the all-important consideration in the treatment of prostatic hypertrophy. A man will, in many instances, suffer the difficulties that he experiences in urinating and the calls to urinate at night, without complaint; and he will usually obtain prompt relief, through the services of his family physician, from complete retention; but when his urinary tract becomes infected, as it usually does sooner or later, he considers his illness seriously and demands relief from his suffering. In my experience, the history of these patients is as follows: They consult a physician, for the first time, when symptoms of complete retention are present. These are relieved usually in one of three ways: Sometimes a sitzbath and hot applications are sufficient, the catheter may be successful, or a suprapubic puncture may be necessary. No matter which method is used, the patient often experiences relief for some time, provided infection does not occur. The marked improvement that sometimes follows when patients have been subjected to suprapubic puncture has been studied by E. Goldman (*Beiträge zur klinischen Chirurgie*, Band xxxi, Heft 1). He believes that the adhesions resulting from the puncture elevate the bladder and diminish or obliterate the retroprostatic vesicle pouch, enabling the bladder to empty itself more completely. Working on this principle, which I believe to be mechanically correct, he has done ventrovesicofixation with some success.

When infection does occur the patient's life becomes miserable. The cystitis may be relieved by irrigation and internal medication, but usually his symptoms gradually progress in severity until he receives surgical relief or else succumbs. The only deaths of unoperated patients that I saw from prostatic hypertrophy resulted from infection and its consequences. These were two Christian Scientists who refused surgical aid.

In discussing the surgical treatment of these cases I shall divide them into two classes: (1) cases in an extreme condition, and (2) cases with sufficient vitality to withstand a radical operation. In the latter variety, I perform perineal partial prostatectomy as follows: The patient is prepared for operation and placed in the lithotomy position. A hypodermic injection of morphine and atropine is given one-half hour before the patient is anesthetized. After he is asleep, a grooved staff is inserted into the bladder. A median incision, about one and one-half inches long, is made in the perineum. The membranous urethra is cut and the incision carried into the prostate nearly as far as the bladder. The index finger is then inserted into the bladder as the staff is withdrawn. The interior of the bladder is explored and the prostate drawn down. If necessary, the perineal structures can be separated laterally with the index finger of the other hand. This permits the prostate to be drawn still more superficially. Subcapsular enucleation of the prostate excepting that portion lying anterior to the urethra, is then done with the index finger. A fenestrated rubber tube, one-half inch in diameter, is passed through the wound into the bladder and is fastened to the skin with a safety

pin. Gauze is packed lightly around the tube and a dressing applied. The patient is propped up in bed as soon as he has recovered from the shock of the operation; the gauze is removed at the end of thirty-six hours and the wound is not repacked. The bladder is not irrigated. The tube is removed as soon as it can be determined that the urine is nearly free from pus—from four to twelve days—depending on the severity of the infection. After the perineal wound has healed, sounds are passed into the bladder to prevent stricture.

The advantages of this method are: (1) The operation can be performed very quickly; (2) the hemorrhage and shock are slight; (3) the bladder is drained at its lowest point; (4) that portion of the prostate which displaces the bladder upward, distorts the urethra and prevents complete emptying of the bladder is removed. I shall now consider the method more in detail,—following the eleven cases that I have operated upon in this manner.

Anesthetic.—Nine of the eleven patients operated upon were anesthetized with chloroform. In two instances ether was used. In these cases there was no contraindication to the use of chloroform but, as I was not sure of the skill of the anesthetist, I felt safer in using ether. Nitrous oxide, followed by ether, would doubtless be appropriate under these circumstances, although I have not used it. In all of my cases the anesthetic was taken without difficulty and was followed by no unpleasant symptoms.

Time of Operation.—I consider that long-continued operations are not tolerated by prostatics in a weakened condition, and that the operation should be done as quickly as possible. Everything should be in readiness before the anesthetic is started. The operation, as herewith described, can be performed in less than ten minutes. If the prostate is one that requires removal by morcellation, and the patient is in bad condition, no attempt should be made to remove the prostate at the first operation. Perineal drainage will give the patient as much temporary relief as will the radical operation and the prostate can be removed later. I followed this method in one case (*vide infra*).

Insertion of the Staff.—This should not be undertaken until the patient is asleep. Great pain and discomfort are experienced by many infected patients when the staff is passed into the bladder. The time saved by introducing the staff before anesthesia is not sufficient to warrant the suffering. In only one case did I fail to pass the staff into the bladder. In this case I cut down on the partially introduced staff and then had no difficulty in getting into the bladder.

Incision.—I have found the median skin incision, one and one-half inches in length, sufficiently large to accomplish the objects of the operation quickly. The line of incision involves no structures of importance and affords better drainage than does a transverse incision.

Senn says (*Journal of the American Medical Association*, August 15, 1903) "the median incision so much praised by some surgeons is altogether inadequate in difficult cases." Van Hook says "the incision need not be longer than one inch or one inch and one-quarter. The writer has frequently removed a very large prostate through an incision less than one inch long."

The longitudinal division of the centrum tendinum perineum has the following advantages: It removes the support of the prostate, allowing it to be drawn down into the wound. When the operation is completed, the weakening or loss of perineal support assists in depressing the elevated portion of the bladder, it obliterates more completely the retroprostatic pouch, and assists in completely draining the bladder. Goldman recognized that when the bladder was elevated the retroprostatic pouch was obliterated and the bladder enabled to empty itself. His operation of ventrovesicofixation is based on this principle. E. W. Andrews (*Journal of the American Medical Association*, October 18, 1902) accomplishes the same result by freeing the prostate anteriorly and allowing it to sink into the perineum. Hawley (*Annals of Surgery*, November, 1903) advises removal of the perineal support of the prostate, with drawing down of the organ in order to obliterate the retroprostatic pouch and allow the bladder to completely empty itself. Zuckerkandl avoids the loss of perineal support by dividing the centrum tendinum of the perineum transversely. Van Hook follows his advice. I have seen no unpleasant results following loss of support of the perineum in these operations.

Incision of the prostate in the median line has been done by Jones, of Rochester. I believe that its advantages are these: It easily allows the finger to pass into the bladder, and makes an opening into the capsule of the prostate in a place that is practically free from blood vessels.

Exploring the bladder with the index finger is readily and quickly done. On two occasions I removed stones from the bladder. After the bladder has been explored, the finger should be hooked over the prostate and the organ drawn down. In two cases I separated the perineal structures. This allows the prostate to be drawn down more easily. I have had no experience with instruments devised to bring the prostate into the wound. The finger has served me well for this purpose.

Enucleation of the Prostate.—The prostate is removed with the index finger assisted by a bullet forceps or a volsellum, if necessary. The finger is introduced under the capsule of the gland through the median prostatic incision. The capsule of the gland is sufficiently torn with the finger to allow removal of the lobes. I usually remove the prostate in three separate pieces. In one case I incised the capsule of the prostate. It was so resistant that I feared injury to other structures while tearing the capsule. I have had two cases in which it was necessary to remove the prostate by morcellation. In these cases it can be taken out with a cutting forceps, like those advised by

Guyon, or curved scissors can be utilized for this purpose. If it is found that a prostate must be removed by morcellation, and the patient is in poor condition, a tube should be placed in the bladder and the prostate removed later. This I did in one case.

I do not irrigate the bladder in these cases. I am of the opinion that an infected wound or cavity will heal satisfactorily if efficient drainage, in the most dependent part, is provided for; and that irrigation is not only contraindicated, but is harmful under these circumstances.

It is my custom to saturate the gauze that is packed around the tube with compound tincture of benzoin. I imagine that by so doing a film is formed over the exposed tissue that prevents the absorption of urine and septic material. Of course the gauze thus prepared does not drain. This is no objection, as in these cases we wish to drain only the bladder and want to protect the operation wound from infection.

Hemorrhage has caused me very little trouble in doing these operations. The median incision, rapid operating, subcapsular enucleation and quick packing reduce the loss of blood to a minimum.

In three instances the patients suffered from temporary incontinence of urine after they had recovered from the operation. In these cases the incontinence ceased without treatment in three, five, and seven weeks, respectively. The same condition occurred in two of Van Hook's cases. One was relieved by faradism; and in the other the dribbling ceased without treatment. In my cases, the patients urinated normally for about one week. Then the dribbling continued for from three to seven weeks after which time the patients urinated normally. The explanation of this might be as follows: The granulation tissue, distal to the bladder, would not be resistant enough during the early stages of healing to prevent closure of the canal after urinating. Later, the granulation tissue would become so firm as to prevent complete closure of the canal and dribbling result. As the healing became more complete, the new tissue would become pliable and allow complete closure of the canal.

I have had no case followed by stricture, but have passed sounds to prevent this complication. In one case a right-sided epididymitis complicated convalescence. It gradually subsided and gave no further trouble.

My experience with prostatectomy is limited to 17 cases: Four suprapubic prostatectomies—three deaths, one good result. Two cases operated by the combined suprapubic and perineal method—one death and one good result. Eleven operated by the method herewith described, good results following each case.

My first case was done by the suprapubic method. The result was satisfactory. The next two cases were done by this method and both died. I then performed an operation by the combined method and got a good result. The second case, operated in this manner, died. I then had an experience that meant very much to me:

While in a small town in Iowa I was asked to witness an operation for stricture of the urethra. The operator told me that he was going to do an external urethrotomy and asked me to look the patient over with special reference to his heart. The patient was fifty-six years old and gave the history of a prostatic with infection. Rectal examination, showed the prostate markedly enlarged. When the patient was asleep a grooved staff was inserted into the bladder and cut down upon. Then a rubber tube was placed through the perineal wound into the bladder.

Six months later this same patient came to me and said: "I was well for two months after the operation. Since that time, I feel that my old symptoms are returning." His bladder was slightly infected at this time. I did a suprapubic prostatectomy and the patient died four days after the operation was performed. At this time I decided that if I ever operated on another prostate gland I should provide perineal drainage of the bladder; and if the patient's condition warranted it, I should postpone the removal of the prostate until his general condition had improved. The operator, whom I watched, violated all rules of diagnosis, pathology and surgery, but succeeded in relieving the patient temporarily; my treatment met the pathologic condition, but the patient could not stand it. The two cases that I have operated upon since the foregoing experience are as follows:

Case I.—The patient was seventy-eight years old; was infected and in very poor condition. I decided to simply do a perineal drainage of the bladder. The perineal cystotomy was accomplished so quickly and the patient was standing the anesthetic so well that I decided to attempt removal of the prostate through the incision. I succeeded in enucleating the prostate quickly and easily. The patient made a rapid and uneventful recovery. I have had eight other cases that correspond to this one. The complications and accidental happenings that occurred have been discussed in the foregoing.

The two cases, that required morcellation of the prostate, are as follows: One case was done while I was away from home, on a hunting trip, and I did not have my surgical instruments with me. An ordinary sound was used to replace the grooved staff and the operation proceeded in the ordinary way, until it was found that the prostate must be removed by morcellation. This was done by using curved scissors, artery forceps and a sharp curette. The second case requiring morcellation was in very poor condition. When it was learned that the prostate could not be removed in the ordinary way, its removal was postponed on account of the weakened condition of the patient. A tube was inserted into the bladder. Three weeks later, the prostate was removed by using the finger, bullet forceps and scissors and a Löwenberg adenoid forceps. The operation con-

sumed little time and the patient made a good recovery. I have since had a cutting forceps made, on the principal of the Guyon instrument, but have not had an opportunity to use it.

Conclusions.—(1) Infection is the all-important consideration in prostatics; (2) perineal drainage of the bladder relieves the patient; (3) many of these patients will not stand extensive operative procedures or long continued anesthesia; (4) partial removal of the prostate, by the method herewith advised, will be tolerated by many infected patients, and a good result obtained; (5) perineal drainage of the bladder only should be done in desperate cases and in debilitated patients in whom morcellation is necessary. In these cases, the prostate should be removed at the second operation.

MEDICAL PROGRESS.

MEDICINE.

Cholelithiasis and Cholecystitis.—These conditions are most often observed in stout, constipated, inactive women of middle age or older, predisposing factors being indolence, gluttony and constipation, writes C. G. Stockton (Buffalo Med. Jour., April, 1904). The cholecystitis of typhoid fever is the type of freshly developed, uncomplicated infection. Yet even here soft gall-stones containing living typhoid bacilli may be found. In chronic typhoid cases calculi are regularly present. So, given a perversion of the nutrition of, and exudation from, the lining membrane of the gall-bladder, and calculi may be expected. In acute cholecystitis the cystic duct swells and is closed off, the lining membrane pours out an inflammatory exudate and the gall-bladder swells. It may thus project below the liver and may be palpated. The right lobe of the liver is usually enlarged and there may be pericholecystitis with adhesions. Pain may be absent, but there is usually continuous suffering, with paroxysms like colic. There may be fever with chills and sweating, and as a rule there is vomiting, with often constipation and moderate tympanites and jaundice. A leucocytosis even up to 30,000, may be expected, whether the inflammation is suppurative or not. Numerous small soft calculi may be passed during the intervals of improvement. In many subacute cases the pain and tenderness, fever and digestive derangement markedly subside, but the large, elastic rounded tumor is felt below the liver-edge, and may be accompanied by a tongue-like projection of the liver. If the case is protracted, the gall-bladder may become thickened, and retracted so that it cannot be felt, and it may be adherent to liver, omentum, intestine, or pylorus, in each case producing important symptoms or vague disturbances of the stomach and bowels. Patients may go for years without any symptoms sufficiently well marked to clear up the diagnosis, yet always in poor health. They may be treated for stomach symptoms or intestinal symptoms, or from time to time may have gastralgia not at all resembling biliary colic. The most common form, however, is that with recurring biliary colic, and it may be confused with stone in the common duct, or obstruction from cancer of the head of the pancreas. With stone in the common duct the gall-bladder is usually contracted. The colic may occur even when the stone is quite too large to engage in the cystic duct. When in the course of cholelithiasis a severe and continuous pain develops, with swelling and rigidity in the region of the gall-bladder, with great tenderness, fever, vomiting and retching, and usually considerable tympanites, we have reason to suspect pericholecystitis. In such cases the danger of perforation should always be borne in mind. As to treatment, an operation is not imperative as soon as a diagnosis of gall-stone has been made, but, on the contrary, many will completely recover by medical means alone. Patients should eat simply, drink freely of water, keep the skin active, exercise moderately, avoid excesses, and keep the bowels free; in other words, prevent a lithemic or acid condition. In irritative conditions olive oil in teaspoonful dose every two hours for several days, or salol, sodium salicylate or antipyrin may suffice. For acute attacks, morphine and atropine will be necessary.

Pancreatic Cysts and Stones.—In a second, very comprehensive article, P. Lazarus (Zeitsch. f. klin. Med., Vol. 51, Nos. 5 and 6 and Vol. 52, Nos. 1 and 2) discusses prognosis and treatment of pancreatic cysts and stones. The former if situated in the head are accompanied by more serious disturbance than in the tail. The prognosis is here rendered grave by the loss of pancreatic juice, the gastric and intestinal disturbances, interference with circulation, severe colics and diabetes. A spontaneous cure is certainly the exception; as a rule the cyst soon refills. Less frequent accidents are hemorrhage, suppuration, ileus and intestinal perforation. Of the three possible surgical procedures, puncture should be avoided. Cystectomy is the ideal method but often the deep position of the growth will only permit incision and drainage by means of anterior or posterior pancreotomy at one or two sittings. The cyst-contents are generally sterile so that there is little danger of infection. Sometimes as much as 500 to 600 c.c. of fluid will discharge in twenty-four hours and the neighborhood of the fistula will often become eczematous owing to the digestive action of the fluid. Another interesting disease of the pancreas is stone-formation which seems to have the same causes as cholelithiasis. Retention is very likely to occur within the ducts since the pancreas lacks the muscular tissue of the gall-bladder and is not in such direct proximity to the diaphragm; though a second duct is present this is generally also implicated in the inflammation. The experimental ligation of large or small portions of the pancreas, never leads to stone-formation since the stagnant juice is rapidly absorbed; a simple infection also gives negative results but if the author combined both, stone eventually formed in cystic dilatations. A precipitation of lime salts from pancreatic juice can only be induced by decomposition and by disintegration of epithelial cells secondary to catarrh; these cells and bacteria form the nucleus of the stone which soon becomes encrusted with lime. Rarely stones may also form secondary to necrosis or indurations of arteriosclerotic, alcoholic or luetic origin or after chronic interstitial inflammation. Anatomically a stricture, obstruction or compression of the duct is generally found while the pancreas is the seat of an interstitial process, not rarely with lipomatoses and fat-necrosis. The organic constituents occurring in stones are epithelial cells, leucocytes, crystals of fatty acids and detritus, the inorganic chiefly carbonate and phosphate of lime. The bacteria present are generally colon bacilli or streptococci. The most usual location of stones is the chief duct near the orifice, where they may compress the choledochus, though gall-stones more often compress the pancreatic duct. They occur in all sizes, are frequently multiple and brittle and less often faceted. The most feared complication undoubtedly is suppuration, since it may lead to bursal empyema or perforation into a large vessel with sepsis. It is a strange fact that the relation between stone and cancer is not so intimate as in the case of the gall-bladder, thus cancer is probably the most common disease of the pancreas while stones are rare.

The etiology of stones often points to a simple gastroduodenitis, but a catarrhal sialangitis may also result from intestinal infections such as typhoid or dysentery, from malaria or from septic and pyemic conditions while an indurative pancreatitis may have arteriosclerosis, lues or alcoholism for its cause. A hereditary tendency probably does not exist and males are affected five times more often than females. An idea of the frequency can only be obtained by post-mortem examinations and the only available statistics gives 1.64 per cent., while for gall-stones the figures are 5 to 12 per cent. The symptomatology presents many puzzling features; often large stones are found at autopsy which have given no symptoms while smaller ones may cause excruciating suffering. The close proximity of the organ to many important structures explains the great variety of symptoms occasionally encountered; those dependent upon the pancreas itself are colic, discharge of a calculus per anum, diabetes and cachexia. The colicky attack is often preceded by digestive disturbances; it is localized under the left costal margin and may spread to the vertebral column and left shoulder-blade. The onset is often marked by a severe chill and followed by reflex salivation and vomiting. Disturbances of circulation such as cardiac weakness and collapse occur here like with other severe abdominal pain. The temperature is never very high; sometimes there is jaundice with swelling and tenderness of the liver and gall-bladder and after the attack a peculiar feeling of hunger and thirst may be complained of. Locally the tenderness is seated in the epigastrium or left hypochondrium, depending upon the position of the stone. It is of the utmost importance to search the stool for stones but considerable patience is required since they may not appear for days or weeks and their absence does not argue against the diagnosis since they are often comminuted in the intestines owing to their brittleness. Diabetes is a frequent symptom of stone, but does not depend on this but upon the secondary chronic inflammation and destruction of gland tissue. Strangely enough the islands of Langerhans which are now regarded as forming a separate ductless gland analogous to the thyroid and hypophysis, seem to be peculiarly resistant toward invasion by fibrous tissues; they may be in every way normal in glands almost completely changed into connective tissue. Their relation to true diabetes has not been definitely settled; they are occasionally present, occasionally absent in this disease and the same is true for the indurative pancreatitis after stone. The character of the glycosuria varies: it may run an acute or a chronic course or may be intermittent with every colic; suppuration seems to exert a favorable influence. The urine is often poor in indican and in the absence of jaundice, the presence of a large amount of fat and of striated muscle fibers form a valuable guide. The cachexia is ascribed to the diabetes and to disturbances of assimilation. Rare symptoms are dyspepsia owing to adhesions with stomach and intestines, bronzing of the skin due to compression of the solar ganglion and aneurism of the descending aorta; infrequent complications are acute pancreatitis manifesting itself by fever, tenderness and continuous pain over the organ; hemorrhage, necrosis, suppuration and carcinoma.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

A Possible New Form of Mediterranean Fever.—The clinician, like the rest of human beings, is often too ready to follow the lead of others. Patrick Manson (Brit. Med. Jour., March 5, 1904) calls attention to the length of time which elapsed from the discovery of the plasmodium of malaria to the dawn of a knowledge that there was such a thing as Malta fever, a separate and distinct type of disease. He presents the photograph of a spirillum which he isolated from a woman who during her residence of three years in Gibraltar, had enjoyed good health. She was bitten on the cheek, presumably by a mosquito, and the wound behaved very unkindly. Three weeks from the time she was bitten she had a rigor, followed by a temperature of 104° F. After profuse sweating the fever terminated four days later. Ten days later there was a recurrence of the fever which lasted three days, rising again to 104° F. One week later she had a similar attack. In all there were five recurrences. The attacks gradually diminished in severity. In the intervals she was quite well. Two months after the first attack, she miscarried. Morphologically the spirillum differed from *Spirillum Obermeieri* in that the curves, instead of being short and abrupt flexures, were few and graceful. It is by no means out of the realm of the possible, in the opinion of the author, that this may be one of a number of different forms of malarial fever of which Malta fever is at present the only one generally recognized.

Anatomical Characteristics of Filaria Perstans.—The distribution of this parasite in East Equatorial Africa is said to correspond almost exactly with the area distribution of the banana and of clothed people. Low states that in the virgin forests of British Guiana, in areas where there are no bananas, it exists in 50 per cent. of the aboriginal Indians. H. C. Bastian (Lancet, March 5, 1904) discusses the problem as to whether it is necessary for the parasite to have an intermediate host or not; as to the anatomy of the worm and the question of the genus to which it belongs. He enforces the following points: (1) We know next to nothing concerning the internal anatomy of *Filaria perstans* and are therefore quite unable to say to what genus it belongs. (2) It is erroneous to say that nematodes pass through one or more metamorphoses, as they probably attain maturity by a process of steady and progressive development. (3) Nematodes stand in no need of being harbored by intermediate hosts but are from the earliest moment capable of maintaining an independent existence. (4) As a consequence, plants or vegetables, as well as water, are probably the sources through which nematodes enter the human body.

Presence of Albumin in the Feces.—Albumin does not occur normally in healthy feces, even when much albuminous food is ingested, but after about fifty grams of somatose traces of albumose and peptone can usually be detected. A. Albu and A. Calvo (Zeitsch. f. klin. Med., Vol. 52, Nos. 1 and 2) examined the stools in a number of intestinal and other diseases for albumose and peptone, including typhoid, with negative results. Despite undoubted lesions in the intestinal walls, the remaining normal mucous membrane is able to assimilate all albumin. Unaltered albumin, however, was found in 20 per cent. of the gastro-intestinal cases and in these traces of albumose occurs after large doses of somatose. In nurslings all these substances are found more constantly, even in health. It is possible that in many cases the albumin does not come from the food but from the leucocytes and epithelial cells of the mucosa.

Condition of the Kidneys in Gastro-enteritis of Nurslings.—It was rather a revelation to M. Hohlfeld (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 3 and 4) to find very distinct evidences of parenchymatous nephritis in all cases of gastro-enteritis and cholera infantum in nurslings which came to autopsy. The kidneys seem to be very sensitive to all intestinal changes, but since the lesions resemble those of intoxications and infections, the etiology is probably the same, since intestinal decomposition products and bacterial toxins

circulate freely in the blood. The bacteria themselves play no part, as they could only rarely be found in the renal tissues and then were not surrounded by reactive inflammation, so that their invasion must be looked upon as agonal or post-mortal. Bacterial infarcts are very rare. In the more chronic intestinal disorders the nephritis is more interstitial in type since an active proliferation of the perivascular connective tissue goes on. Clinically, hydrops and edema are infrequent and moderate, the urine generally contains a small amount of albumin, few white and red cells and more abundant renal cells, hyaline, granular and epithelial casts. The sudden appearance of hematuria argues more for hemorrhagic infarct than for hemorrhagic nephritis. The lesions are least marked in chronic gastro-enteritis and most intense in acute colitis. A thrombosis of the renal vein can only be diagnosed if anuria sets in. The prognosis in general is good if an interstitial process has not yet set in. Therapeutically, subcutaneous saline infusions are particularly recommended.

Bacteriological Examination of Blood After Death.—Before it was customary to make blood-cultures during life, the blood was frequently examined bacteriologically after death, but owing to imperfect technic, very unsatisfactory results were obtained, as many of the findings could only be explained by an agonal or post-mortal invasion of bacteria. If the blood is taken from the heart instead of the peripheral veins the cultures will be less frequently sterile in septic diseases since the temperature does not fall so rapidly after death and an active proliferation of bacteria continues, for some time. M. Simmonds (Virchow's Archiv, Vol. 175, No. 3) has had experience with 1,200 cases and finds the results very reliable. He proceeds as follows: Not later than thirty-six to forty hours after death, the right ventricle is singed with a hot knife and a sterile syringe then introduced. One to twenty drops of the aspirated blood are diluted with a tube full of fluid agar and then plated in the usual way. After twenty-four hours a diagnosis is generally possible, especially since the growth of many germs is characteristic on blood-agar, thus colonies of streptococci can be recognized by their light areola induced by hemolysis, those of pneumococci generally possess a greenish color, while the colonies of colon bacilli are large and tend to spread superficially after they have reached the surface. The findings agreed remarkably with those obtained during life and evidences of a post-mortal invasion could hardly ever be obtained. In almost half of the cases, the blood was found infected and the germs commonly present were streptococci. In about 95 per cent. of the cases only one variety of germ was present, but frequently the plates were so overcrowded with colonies that other forms might have been overlooked. Typhoid and anthrax bacilli occurred only with their respective diseases, pneumococci in croupous pneumonia, exudative pleurisy, meningitis and tuberculosis, and rarely in malignant endocarditis, acute osteomyelitis and suppurative peritonitis; staphylococci in osteomyelitis, pyemia and septicemia, streptococci chiefly in scarlet, diphtheria, phthisis and infections; colon bacilli in diseases of the abdominal organs. From one case of malignant endocarditis, a growth of diphtheria bacilli was obtained. The blood was sterile in acute tuberculosis, polyarthritis, chronic diseases of the heart and arteries and of the nervous system, chronic bronchitis and emphysema and in the newly born. The largest number of bacteria were found with streptococcus, less in coli invasion and very few when pneumococci and typhoid bacilli were present; in the latter case better results were obtained with blood taken directly from the spleen. In 129 cases of scarlet fever the blood was sterile only 39 times; these patients died during the first three or four days of the disease before necrosis of the pharyngeal mucous membrane had developed. With streptococci there was always a severe tonsillitis, pharyngitis or rhinitis or some suppurative process. In 68 cases of diphtheria, streptococci occurred 38 times, pneumococci once; here also a pathological process in the nasopharynx could usually be detected. For measles the figures are: sterile ten times, streptococci four times, pneumococci once; for phthisis, streptococci 28 times, pneumococci four times, colon bacilli five times, sterile 66 times. Statistics for tubercle bacilli could not be obtained on account of the long time necessary for their growth. It seems clear that mixed infection plays a very prominent rôle in active consumption and ready portals of entry for streptococci are found in the pulmonary lesions and for colon bacilli in the intestinal ulcerations. In cases of pyemia, staphylococci were the usual findings and it seems that these germs more frequently set up embolic and metastatic foci than streptococci—an observation which has also been made during life. Rarely a case of decided sepsis will give only sterile cultures, both before and after death, and it is possible that some anaerobic bacillus was the cause or that the condition was merely an intoxication. Positive cultures with malignant tumors could generally be explained by the breaking down of the tumor and the germ found always corresponded to the situation of the growth. In one case of operated uterine cancer, no breaking-down was found, so that infection during operation and rapid multiplication in the blood-stream must be held accountable. This is probably of frequent occurrence after operations and catheter-fever is most likely also due to blood-infection, but as a rule the germs are excreted equally as rapid. Especially interesting results were obtained in peritonitis. Though the peritoneum forms a large surface with great powers of absorption, sterile cultures were common even where putrid fluid was found in the abdomen, but when the patient had been operated, colon bacilli and streptococci were frequent. The great value of post-mortem blood examinations is evident from the fact, that frequently the cause of death could not be cleared up at autopsy until the presence of streptococci, etc., gave evidence of a sepsis.

Origin of Plasma Cells.—The connective tissue of the skin is extremely rich in cellular elements which vary considerably under different conditions. In health the spindle-shaped cells are poor in protoplasm and contain a small nucleus with little chromatin but in chronic infectious processes a marked hypertrophy and hyperplasia of the cellular elements is seen. It is here that plasma cells abound and these can be described best with L. Ehrlich (Virchow's Archiv, Vol. 175, No. 2) as hypertrophied connective tissue cells of more rounded form and more granular protoplasm. Tumefactions consisting chiefly of plasma cells, may be termed plasmomata; these include most of the chronic infectious granulomata and the lesions of a variety of skin diseases. By means of special stains the plasma-cell can now be clearly differentiated from all other elements and then appear as round cells when fully developed, more or less angular or elongated when compressed. Methyl green and pyronin bring out distinct granulations such as are common in pathologically degenerated cells, while polychrome methylene-blue and aniline alum give evidence of a well-marked spongioplasm which fills up the space not occupied by the granules. As a rule, one excentric or two polar nuclei are found with five to eight chromatin bodies of radial configuration and a central nucleolus. Proliferation generally takes place by direct division. In pathological states, degeneration affects the granuloplasm more than the other cell constituents, thus in

syphilis, hyaline changes begin in the neighborhood of the nucleus and gradually extend into the periphery and in edema the entire cell becomes cloudy and loses its dusty appearance. In other conditions, the distribution of the cells is characteristic, as in rhinoscleroma where they accompany the blood-vessels; in soft chancre where they lie adjacent to the superficial necrotic focus and in the hard chancre where they are everywhere permeated by connective tissue strands and in the syphilitic papule where they bear a close relation to the sweat glands. The origin of the plasma cells is traced to the connective tissue by some, to the blood by others, but the author was able to demonstrate conclusively that they are derived from hypertrophic connective tissue cells by means of a series of well-defined transitional elements.

Relation of Posterior Nerve-root to Spinal Ganglion.—According to K. Kleist (Virchow's Archiv, Vol. 175, No. 3) division of the posterior nerve-root will set up a degenerative process in the spinal ganglion which becomes less intense in a centrifugal direction and probably does not extend to the nerve itself unless some peripheral branches are severed during the operation. About one-sixth of all the cells are destroyed; they are situated in the dorsal border and the proximal pole, while the axillary zone and the ventral border remain normal but for a moderate cell-proliferation. The rarefied cells of the dorsal border will eventually be imbedded in connective tissue; the peripheral stump of the anterior root dies off, the central degenerates only partly and develops young nerve fibers. When the nerve itself is divided, the posterior root will show a degeneration which decreases in intensity toward the cord, while the ganglion loses more than one-third of its cells, especially in the axillary zone and the ventral border. Here also a connective tissue proliferation will appear. The anterior root, in distinction to the posterior, shows less marked degeneration and retains the power of regeneration. These facts prove that the majority of posterior root-fibers form an uninterrupted tract from the cord to the peripheral nerves and that the ganglion cells form an effectual barrier toward centrifugal and a less marked resistance toward centripetal degeneration.

Pathology of Scars.—The interesting article of R. Minervini (Virchow's Archiv, Vol. 175, No. 2) gives some pathological data of importance concerning the various forms of scars. In artificial wounds the degree of retraction bears a close relation to the direction of the connective tissue fibers in the skin; it is greatest when the incision is vertical to these. Within twenty four to forty-eight hours the edges are fixed in their new position by the reactive inflammation. During the period of granulation, the incision will gradually shorten but after cicatrization it will regain its former size and often elongate beyond this. As a rule, slightly shrunken scars will elongate more than those which have retracted considerably. In recent scars the epidermis is well developed microscopically and of almost normal appearance; the connective tissue is still rich in fibroblasts, blood-vessels are abundant but elastic fibers, nerves and lymphatics cannot be found. In old scars, fibrous tissue predominates and elastic fibers have made their appearance but these are few in number and very delicate and only have a lateral connection with the fibers of the surrounding skin. In wounds healed by first intention they are first seen by the end of the second month, in those by second intention by the third or fourth month, and they probably take their origin directly from cell-protoplasm and not from the fibers already present. The number of blood-vessels does not diminish with age but their caliber becomes somewhat reduced. True lymphatics are also absent during the later stages but a few delicate nerve filaments may occasionally be found. Two processes thus go on in all scars: first a change of embryonal tissue into permanent fibrous tissue, requiring one to two months and secondly, a new formation of elastic fiber and nerves, concomitant with which there is the appearance of dermal papillæ. The parts will, however, never be the same as normal skin, for glands, hair follicles and muscles are permanently absent. The functions too, are imperfect for tactile sensation is never as delicate. The histological structure of scars secondary to destructive processes and those found on the abdomen after pregnancy, resembles that of all old scars and should not be regarded as atrophic but traumatic. In atrophic scars, all the structures are imperfectly developed while in hypertrophic scars the lesions resemble those of any scar in the early stages.

Lesions after Obstruction of Salivary Duct.—In one case, where the excretory duct of the parotid gland was obstructed by a stone, O. Langemak (Virchow's Archiv, Vol. 175, No. 2) found a connective tissue hyperplasia, in a second, where the obstruction was a longer duration, there was also considerable atrophy of gland tissue. To decide if the stone acted as irritating foreign body or if the lesions merely depended on stagnation of secretion, the author ligated the duct in a number of animals, but obtained exactly the same changes in about the same time. Even when the trauma was purposely rendered more severe the hyperplasia was not more marked. It is probably caused directly by the venous hyperemia and edema which is set up by ligation.

The Blood in Pulmonary Tuberculosis.—A study of the blood in patients suffering from this disease has been made by J .M. Swan (Jour. Am. Med. Ass'n, March 12, 1904). Twenty-five cases of pulmonary tuberculosis are included and one case of extensive cavity formation due to bronchiectasis. The classification adopted is that of Grawitz, who divides the disease into three stages, the first, in which there is a beginning affection of the apex without cavity formation; a second stage in which there are symptoms of cavity formation without fever or with a slight fever; and a third stage in which hectic fever is present. The writer concludes that the blood picture in this affection is not constant. Cases were found in each of the three stages of the disease which were quite out of the limits of cellular and hemoglobin content described by Grawitz. The average case in the first stage of the disease presents a slightly reduced number of erythrocytes, a moderate reduction of the hemoglobin and about a normal number of leucocytes. In the second stage the average case presents a varying degree of leucocytosis, due to an increase in the number of polymorphonuclear neutrophile cells. The erythrocytes are present in about normal numbers, and the hemoglobin is often normal in percentage. In the third stage there is a reduction in the number of erythrocytes, a moderate leucocytosis composed of the polymorphonuclear neutrophile cells and a high hemoglobin percentage. Hemorrhage is usually followed by a marked reduction in hemoglobin, a slight reduction in the number of erythrocytes. Leucocytosis is not an invariable feature of a posthemorrhage blood. Albuminuria of itself appears to cause no constant change in the blood picture. Tuberculous diarrhea is apparently attended by a reduction of the number of the erythrocytes and of the percentage of hemoglobin and by an increase of the leucocytes. Pleurisy is usually accompanied by a polymorphonuclear neutrophile leucocytosis. There is no distinctive blood picture that will serve to differentiate between extensive cavity forma-

tion due to tuberculous degeneration and that due to other causes. Further, it was also found that leucocytosis is not a constant feature of cavity formation. The leucocytosis occurring in the course of a pulmonary tuberculosis is due to an increase of the polymorphonuclear elements and not to an increase of the lymphocytes or of the transitional cells. The absence of the eosinophile cells from the blood may be looked upon as an unfavorable prognostic sign. The increase of these cells, while the patient is under treatment, may be taken as an indication that the progress of the disease has a tendency to become arrested.

Resistance of Acid-fast Bacteria.—In a recent communication a series of experiments is presented by R. C. Rosenberger (Medicine, March, 1904), in which he has determined the actual resistance of this interesting group of bacteria to mineral acids and other reagents. He found that in doubtful cases where these bacilli are encountered, a diagnosis of tubercle bacilli can be positively made by after-treatment of the stained spread with sweet spirits if niter or glacial acetic acid, as these two reagents completely decolorize other acid-fast organisms, such as the grass and butter bacilli and the smegma bacillus. The author claims that inoculation experiments should always be made where only a few organisms are observed.

Adenoma of Sweat Glands.—There is no question that the sweat glands of the skin sometimes undergo adenomatous hyperplasia, though many of the tumors reported in literature are not true adenomata. L. Pick (Virchow's Archiv, Vol. 175, No. 2) has carefully reviewed the subject and finds that beside the intimate relation of these tumors to the glands, there are certain well-defined morphological characteristics. These are a double layer of epithelial lining, simulating that of the excretory ducts, an elastic limiting membrane surrounding the ducts and a lumen filled with excretory products. Three varieties of tumors may be distinguished: Those derived from fully developed glands, those taking their origin from the epidermis or from rudimentary glands, and lastly, mixed types. Occasionally the excretory duct alone is involved (syringo-adenoma) but an undoubted adenoma of the coil alone (spiradenoma) has not yet been described. Upon the vulva, these tumors closely resemble adenocarcinoma. Among other tumors may be mentioned benign epithelial growths and carcinomata which may retain their specific character or closely simulate epitheliomata of the skin.

EYE, EAR, NOSE AND THROAT.

Pulsating Exophthalmos.—The majority of the cases of this distressing condition result from an arteriovenous aneurism of the carotid artery and cavernous sinus. A few are undoubtedly due to spontaneous aneurism of the ophthalmic artery; 71 per cent. of cases follow traumatism. F. W. Murray (Ann. of Surg., March, 1904) states that immediately following rupture of the artery, blood escapes into the sinus. The increased pressure interferes with the venous pressure through the superior ophthalmic vein and passive congestion results. The symptoms of this may develop rapidly or slowly, depending upon the opening between the artery and sinus. Characteristic symptoms are exophthalmos, pulsating tumor at the inner angle of the orbit and bruit. The protrusion of the eyeball is in most cases extreme. The lids swell, and become edematous. The conjunctiva is chemotic. Its veins are distended and tortuous. Its circulation is reversed. The vein becomes practically an artery and forms a pulsating tumor above and to the inner side. Sight may be unimpaired, but it grows weaker and blindness will follow unless the lesion be removed. Subjective symptoms are marked; headache and other cerebral disturbances being the usual cause for the patient's seeking relief. Compression of the carotid affords temporary relief of the symptoms. Ultimately, unless treated, these cases all go on to a loss of sight, with the exception which proves the rule, of a few which have gone on to spontaneous cure. The therapeutic measures are limited by the morphology of the parts to a simple reduction of pressure in the sinus so that passive congestion of the superior ophthalmic vein may be relieved. Ligation is the operation of choice and in six weeks at the outside, cure, in successful cases, is complete by this method. It is interesting to note that the general mortality after ligation of the common carotid is probably about 25 per cent. In such ligation, however, in the case of exophthalmic patients, the mortality is not over 10 per cent. Reference to the tables of Sattler and Slomann shows that the percentage of cures were in each case about 50 per cent., the mortality being about 4 per cent. Blindness may result if the operation be done too late. In the tables referred to, the time of its inception was from four to sixteen weeks. Recurrence is more frequent in the traumatic cases. Those patients who are blessed with a low grade of compensatory circulation have the highest chance for recovery. The superior thyroid artery plays an important part in this circulation, and in several cases, it was found, some weeks after the carotid ligation, to be dilated and strongly pulsating. This suggests the desirability of tying the external carotid below the origin of the superior thyroid. This delays the establishment of a collateral circulation. It may occasionally happen that both common carotids have to be tied for the cure of pulsating exophthalmos. There are six cases in all recorded, an interesting observation on them being that they were accomplished without mortality and in five cases there was either marked improvement or cure. In conclusion, the author stated that in his opinion the internal carotid should first be tied, this failing, the ligation and resection of the branches of the superior ophthalmic vein at the inner angle of the orbit should be done, and if necessary a resection of a portion of the main vein. In case of this failing, ligation of the opposite carotid should be instituted.

Serum Treatment of Hay Fever.—The claims made by Dunbar for the efficacy of this plan of treatment has led a number of other observers to report their results. A series of ten cases is published by L. S. Somers (Medicine, March, 1904) who used the antitoxin made from the serum of animals inoculated with the pollen toxin of goldenrod and employed it in the form of serum and powder. One or two drops of the serum are placed in each eye and nasal chamber whenever an attack of hay fever is expected, or on the presence of any irritation. The dried serum may also be employed, when mixed with an inert powder such as milk sugar, but it can only be used in the nasal chamber. The results in these ten cases proved very gratifying. The serum produces prompt amelioration of the symptoms in the majority of cases and in a smaller number the affection may entirely disappear. Where slight or no action is seen after its use, pollen as an etiological factor does not predominate. When administered in advance of the attack or during the same irrespective of the severity, it produces marked palliation rather than absolute cure. Its effects upon future attacks is as yet unknown. The serum in powder form is slightly soothing to the mucous membranes of the nose, but has little influence upon the other symptoms and in occasional cases may act as a direct irritant.

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SATURDAY, APRIL 23, 1904.

NEW YORK'S INSANE.

The State of New York has been fortunate in the appointment of two successive Commissioners of Lunacy who have been chosen for their more than ordinary ability to organize and to administrate.

The resignation of Dr. Frederick Peterson after but two years' service would have caused consternation among those who had hoped for full fruition from the many reforms which he had started during his brief service, were it not for the fact that his successor, Dr. William Mabon, is another man of high scientific attainments and a worker for ideals.

Dr. Peterson's service has been marked chiefly by the inauguration of careful plans to make the administration of the State Hospitals more complete in scope and efficient in detail. He has endeavored to raise the State Hospitals from the level of custodial institutions to real places in which scientific study of the insane is carried on and in which active therapeutic measures are in use. This scientific idealization of the excellent custodial system of New York State has necessitated many changes which we may be able now, perhaps for the first time, to appreciate as a whole.

In addition to the establishment of 5,147 beds to increase the capacity of the present hospitals, Dr. Peterson has brought about the segregation of the tuberculous insane, by isolating them first in solariums and tents, and later in three tuberculosis hospitals which have been especially constructed for that end. Appropriations for the construction of ten isolation pavilions for infectious diseases have been secured, and he has made it a part of his policy to insist that every State Hospital shall have a separate pavilion for acute cases of insanity.

Along with this more enlightened and practical classification of the patients of the State in a broad medical way we have been gratified to observe the better means of treatment that have been provided for them, such as the installation of surgical operating rooms, hydrotherapeutic apparatus, and electrical and mechanical therapeutic aids. An improved dietary has been put in operation, with an increased ration allowance over the restricted Atwater dietary that raised such a protest. Nurses and attendants are beginning to receive better wage, making it an object for intelligent people capable of higher training to enter the service.

But apart from the betterment of the patients already under care, perhaps the most valuable work that Dr. Peterson has accomplished is the reorganization of the Pathological Institute on a thoroughly practical and common sense basis. Under Dr. Adolf Meyer original work is going on, relative to the actual needs of the insane, and during the past year a series of seminars have been held in which assistants from all over the State have participated. This thoroughly practical method cannot fail to establish a coordinate system of case examination and be instrumental in introducing some order in the purely clinical aspects of psychiatric study.

Dr. William Mabon, with his work at Willard, Ogdensburgh and Bellevue, has had the practical experience that can appreciate the far-reaching value of the changes instituted by Dr. Peterson; and it is a subject of the greatest felicitation that, having found such a man, the State has made the term of service more permanent, and has made a more adequate appropriation for his salary.

How Dr. Peterson was able to accomplish so much in two years, is hard to see, unless it were at the cost of great personal sacrifice; for the plans and problems which he hands on to his successor are such that will take many years to carry out; but if fulfilled, as we have every hope to be-

lieve they will be, the condition of the hospitals for the insane in New York City and New York State will be a source of much pride to their citizens and an example for other communities.

"HOW WE APPLES SWIM."

The desire to convert others to their own particular way of thinking, and the distribution of tracts to further that end seems to be inherent in the American breast. This missionary fad has been rampant among us, since the early days of the Colonies, when one John Tewksbury issued a screed concerning the thirty-nine articles of faith, which was more remarkable for its alliterative and alluring title of "Buttons for an Unbeliever's Britches," than it seems to have been efficacious in remodeling the stern and rock-bound religious tenets of our forefathers.

From this time the proselyting tide, reinforced with documentary arguments, ebbed and flowed. It rose with the flotsam of hydropathy, faith-cure, phrenology and other medical cults, and it fell with the jetsam of peculiar religious sects. This was probably due in part to the fact that the evangelical enthusiasts were prone to send all collected money to foreign countries for the conversion of the distant heathen, while they left the domestic article to fatten on the tracts alone, and it was also aided and abetted by that firm and unvarying support of patent medicines that seems in most cases to be donned with the clerical frock. This caused a division of interests with a stronger bias toward practice than to preaching, for it is an established fact that there is not a proprietary remedy on the market which is not endorsed by clergymen to a degree that leads to a suspicion among the ungodly that these reverent gentlemen must have led rather frisky lives in their unregenerate days if they are now obliged to take all the nostrums that they extol. It might also tend to the belief that it is only the peculiar virtues of their vaunted drugs that have prevented the curtailment of the straight coat into that of the straighter jacket.

The latest pebble that has been thrown on the beach of controversy seems to be the theory that apples are a cure for the tobacco and drink habits and are also conducive to morality. This appears to be endorsed by both Church and State, and has taken such a firm hold on the convictions of Mr. John T. Stetson, director of pomology at the World's Fair, that he announces that pamphlets setting forth the efficacy of apples, as a cure for bad habits will be distributed with 1,000,000 apples, on "apple day," September 27, at St. Louis. In order to work a cure by the apple diet, Mr. Stetson advises that when one has a craving for a smoke or a drink, that he should take an apple in its place. Just what medicinal property is contained in the fruit, the Director has the honesty to say that he does not know, but he goes on to cite Senator Cockrell's moral life, and high standard of statesmanship, as an incident of the reforming influence of apples. For he says that "it is a well-known fact that the Senator makes his own lunch of apples every day, to the exclusion of all other food, and has kept up this diet for over thirty years." This is, in itself, most interesting corroborative testimony, which, however, is hardly necessary, as it would seem that if a patient could be induced to take an apple (or anything else) every time that he "craved a smoke or a drink," in place of the tobacco or liquor, that little more would be needed.

As to apples as a food, they, in common with the whole category of acid fruits, have little nutritive value. They consist for the most part of water and carbo-hydrates, and are useful simply as a means of correction, for what has grown to be known—for the want of a better name—as "an unbalanced diet." Figuratively speaking, Americans have been charged with "eating too much corn, and too little fodder." Beefsteaks, with their proteids, have proved more tempting, and the starchy foods with their carbo-hydrates have been neglected. The result of this one-sided dietary has been a general dyspeptic feeling of *malaise*, that has not been thoroughly understood, but which has been found by experience that whisky and tobacco will anesthetize if not relieve. This has been most marked among the working classes of Great Britain, where fruit is very scarce and the prices charged for it are very high, and has, according to the London *Lancet* given rise to the belief that the man that was overfond of liquor had small taste for fruit, just as the man who cared for fruit had little liking for alcohol.

In this country, however, we have been more fortunate, if not more sensible, in the mixing of our foods as well as our drinks. Thus the apple has furnished a sauce as well for the goose as the gander, and has long been a foil for the succulent roast pig. Cranberries are always served with turkey and mint sauce has appetizingly tempered the stomach to the shorn lamb, while horseradish has added piquancy to the

rather prosaic beef. So as far as the equalization of digestion is concerned, and its indirect effect on the cravings for tobacco and stimulants Mr. Stetson and his million apples may prove a blessing to the stranger in the gates of St. Louis.

Let us hope, however, that he will not push his remedy to its full therapeutic effect,—for the result of the introduction of fruit,—particularly when immature, into the lumen of the small intestine is sometimes followed by a train of active symptoms that has been described in prose and sung in verse. We are all familiar with the poetical desire to hang Jeff Davis to a sour apple tree, with a subsequent confinement of his diet to the fruits thereof, while the little peach of emerald hue, that was the undoing of Johnny Jones and his sister Sue, is too well known to even require quotation marks. Luckily the overdose of "apple" is more painful in its effects than it is dangerous in its results, and the "balance of diet" in these cases is usually restored by the full exhibition of camphorated tincture of opium, or the free use of that domestic household treasure, Jamaica ginger. But an ounce of prevention is worth a pound of cure, and we trust that the "Pomologist's" specimens will not be "the goodly apples rotten at the core," that are usually found in country groceries, which have so many bruised sides that even the trade procuring card of "take one" fails to empty the barrel.

With regard to the influence of an apple diet on morality, we confess that we do not grasp its connection. The Reverend Lycurgus Morris, however, has discovered it, and in an address to his dusky flock has urged them to accept it, and abide with it forever. For he states "it calms the passions of men and increases the chastity and self-restraint of women, as may be shown by many instances in history, both sacred and profane." As to what particular events the Ohio parson refers, we cannot say, but he can hardly claim that Eve's period of greatest sanctity was ushered in with the eating of the fruit in the Garden of Eden, or that Helen of Troy was more circumspect in her treatment of the appreciative Paris after receiving the apple from his hands.

The colored clergy have, however, always been strong on early Biblical lore, so we hope that Brother Morris's particular orchard will be spared, like that of Uncle Remus, from the raids of ruthless marauders, either human or satanic.

"The devil thought he'd bother me
By cutting down my apple tree.
He didn't bother me at all,
For I had apples all the fall."

ULTRAMICROSCOPY.

It has long been known that by intense illumination slits in silver mirrors can be rendered visible which measure only one ten thousandth part of a millimeter in diameter. To make this possible it is essential that light rays of great intensity shall fall upon the object under examination in such manner that only the reflected rays, not those of the source of light, shall reach the eye of the observer. This principle has been utilized in the so-called ultramicroscopic examination of objects, and it has been ascertained that while with our finest microscope lenses, under ordinary conditions, the degree of linear magnification does not materially exceed the one thousandth part of a millimeter, the ultramicroscope renders possible the recognition of objects measuring but a millionth part of a millimeter in diameter. In this manner magnitudes become subject to direct inspection which lie on the border line, where the science of physics and chemistry meet in their respective conceptions of the constitution of matter. The essential point, as has just been stated, is the degree of illumination, while the actual "power" of the objectives is not increased; in other words, the size of the image is the same, but the susceptibility of the retina is increased. We see this principle exemplified in our recognition of the finest particles of dust in the atmosphere of a room when sunlight enters, and when the optical axis of the eye is at right angles to the rays of light. Under ordinary conditions the same particles of dust would remain invisible.

Ultramicroscopical examination opens up an entirely new field of research, and it is to be anticipated that medical science also will be benefited as a consequence. Bacteriological investigations especially will receive a new impetus, as the method is especially adapted to the examination of separate particles, while for the study of connected cells it is scarcely applicable.

Raehlmann has pointed out that many microorganisms can be rendered visible much more readily by the aid of the ultramicroscope than is possible by staining, examination in the hanging drop, etc., and that a great many forms become visible in this manner only. In putrefying albuminous solutions several varieties of ultramicroscopic microorganisms have been met with, which were actively motile, and in several distinct and typical alterations in form have been observed. Studies in this particular direction appear of signal value in the identification of different types.

In the secretion of trachoma Raehlmann found two ultramicroscopic types, and a markedly polymorphous organism, in which three distinct types of form could be distinguished. In the conjunctival secretion in the various affections of the eye unknown bacteria were similarly discovered.

Very interesting are Raehlmann's studies in connection with solutions of glycogen. Such solutions have a slightly opalescent bluish color and upon examination even with the most powerful immersion lenses they appear perfectly homogeneous. On ultramicroscopical examination, however, tiny little particles are seen, which in a solution of one in several thousand are so numerous that they cannot be individually recognized. On further dilution they become apparent, and it is then noted that they execute oscillatory movements which continue indefinitely. Very curiously these movements are dependent to a great extent upon the distance between the individual particles, diminishing in intensity with the degree of dilution, so that finally a point is reached where they cease altogether. Raehlmann accordingly does not regard these movements as identical with the common Brownian movements, but as the visible, motor expression of influences of gravitation, by which the particles attract and repel each other. The individual particles are apparently molecular complexes of typical structure, and may be viewed as molecules of a second order, which in their aggregate properties and relation to the surrounding water represent the typical form in which glycogen exists in solution. This supposition is borne out by the fact that on adding a few drops of a solution of a diastase to the glycogen solution it is possible to observe that as inversion goes on the particles become smaller and smaller and finally disappear altogether.

Quite analogous results have been obtained in the case of the albumins. Here also the individual particles disappear under the influence of the corresponding digestive ferments.

Noteworthy further are the results which Raehlmann obtained in a study of the aqueous humor of the eye. On ultramicroscopical examination it was found that the fluid in question contains the smallest amount of albumin of all the physiological fluids of the body. The lens, on the other hand, is very rich in albumins, which are manifestly contained in the fibers. They dissolve out when the lens is placed in water, and can be microscopically demonstrated. Under normal conditions these albuminous complexes lie firmly packed together surrounded by the elastic capsule of the lens, so that an elastic and uniformly refractive medium results. Opacities of the lens, according to Raehlmann, result not as a consequence of coagulation of the lens fibers, as has hitherto been supposed, but from optical inequalities of refraction, which are the outcome of a dissociation of the albuminous particles and the interposition of fluid. This conception of the process seems to furnish a new and satisfactory explanation of cataract formation. Quite in accord with this view is the result of the following experiment: On wounding the lens capsule with a fine Graefe lance, through the anterior chamber, the aqueous humor on ultramicroscopical examination is found filled with albuminous particles. This proves that as a result of the injury the aqueous humor does not penetrate the lens, as has been supposed, but exactly the opposite occurs, and it is assumed that these particles produce stasis in the efferent lymph vessels, and may thus be responsible for many of the concomitant symptoms of traumatic cataract, the occurrence of which has hitherto not been satisfactorily explained.

The above results are some of the few which have already been obtained with the ultramicroscope and serve to exemplify the importance of the subject.

ECHOES AND NEWS.

NEW YORK.

Chicago Meeting of Bellevue Alumni.—New York University sent as its representatives to the annual meeting of the Alumni of the University and Bellevue Hospital Medical College, held at Chicago, the present week, Dr. Joseph D. Bryant, head of the department of surgery; and Dr. Egbert LeFevre, professor of clinical medicine and corresponding secretary of the medical faculty.

Dr. Peterson and the Hospital Movement.—A recent issue of *Charities* has the following appreciative comment: "The resignation of Dr. Frederick Peterson as president and member of the New York State Commission in Lunacy, has been announced. It is greatly to be regretted that the State should lose the services of so eminent an alienist. Dr. Peterson's interest in the insane has been very largely scientific, and he has given a large share of his attention to the development and improvement of the hospital side of the State care system. The Pathological Institute in New York City, which is under the direction of the commission and which was established to pursue independent research in the field of psychiatry, and to develop, organize and correlate the scientific work of the various State hospitals, has been reorganized and strengthened, and under its capable director has been brought into relations of close cooperation with the State hospitals. Both by the courses of lectures given by the director to the State hospital physicians who have met in New York for the purpose, and by the personal visits

made by the director to the State hospitals, the medical men in the service have been much stimulated, and the scientific aspects of the care and cure of the patients have shown the beneficial effect of this influence. Dr. Peterson has also made an effort to encourage promising young men from the medical schools to enter the State hospital service as clinical assistants without salary, as is done in the case of the large general hospitals in the cities. If these young men leave the service later for private practice they take with them a very valuable experience in psychiatry, one of the most important and most neglected branches of medical science. Among the improvements which are due to Dr. Peterson's initiative is the appointment by the commission of a medical inspector, who supervises both the fourteen State hospitals and the twenty-three licensed private asylums, which were not previously, in all cases, under proper medical inspection. Another reform is the statutory provision that in emergency cases, when the condition of an alleged insane person is such that he should have immediate care and treatment, he may be received at a State hospital for five days pending the routine of procuring needed commitment papers. Dr. Peterson has advocated the most enlightened and scientific care of supposedly recoverable cases of mental disease, and has for many years sought for the establishment of separate psychopathic hospitals in the large cities for the preventive and curative treatment of insanity. Last year the bill introduced in the New York legislature to establish such a hospital in New York City failed to receive the favorable consideration it deserved, though the plan had been advocated by the Governor, and was supported by the State Commission in Lunacy, the State Charities Aid Association, and, to a large extent, by the press and the public. The similar bill already introduced this year has become law.

Hospital Appointments.—During the past week the following students at the College of Physicians and Surgeons received appointments: Hudson Street, 1st, T. H. Cherry, G. D. Hale, E. T. Hull; Alternates, R. W. Carter, C. C. Kimball. French, 1st, H. A. Craig, C. W. Walser; Alternates, G. H. Schenck, G. H. Meyer, W. Blancard. General Memorial, 1st, L. L. Miner; Alternate, H. L. Hooper. Jamaica (L. I.) Hospital, J. C. Gain. St. Michaels (Newark, N. J.), 1st, G. H. Meyer, F. H. David, M.D., P. & S., 1903. Bellevue (First Division), 1st, I. O. Woodruff, H. L. Hooper, R. W. Carter, J. D. Peters, C. G. Bandler; Alternates, J. M. Long, C. D. Cleghorn. Gouverneur, P. J. Hamill, J. D. Hastie; Alternate, E. O. J. Eytinge. Harlem Hospital, G. H. Hibler.

PHILADELPHIA.

Phipps Institute.—Dr. Randle C. Rosenberger has been appointed pathologist to the Phipps Institute for the Study, Prevention and Cure of Tuberculosis.

St. Luke's Hospital.—St. Luke's Homeopathic Hospital patients are soon to be moved from the present Broad Street building to a large house at Broad and Wingohocking streets. It is the intention to acquire the adjoining property and erect a building that will be materially larger than the one at present occupied.

Municipal Hospital.—Plans of the new Municipal Hospital now under construction show elaborate arrangements for the perfect isolation of the patients from the outside world and of those suffering from different diseases from each other. The plans include six detached buildings about 50 feet apart and connected by an 8-foot corridor semi-circular in shape, built on a radius of 400 feet. Three of these buildings will be located on either side of a central one which contains clinic rooms, laboratory, etc. On the opposite side of the corridor will be a nurses' home, a receiving room and the kitchen. Each of the units for smallpox, scarlet fever and diphtheria will have its own physicians, nurses, orderlies and ambulances. Each physician, nurse or attendant leaving the institution must each time pass through three rooms; a disrobing room, one in which antiseptic baths are taken, and a room for donning sterilized clothing. The smallpox unit is now completed.

Use of Opium Increasing.—Recent raids on opium joints in this city have led to investigations which are said to show alarming facts. It is stated that opium joints are conducted under the knowledge of the police and that the smoking of the drug has doubled within the past three years.

Sterilization of City Water Supply.—The Trades League Subcommittee on Municipal Affairs have recently urged Director Martin to sterilize chemically the water supply of the city in order to prevent typhoid fever. They recommend the use of electrozone, a disinfectant now employed on the city streets; it is made by passing an electric current through salt water. It is understood that they received no encouragement toward chemical disinfection of any kind. Officials do not speak favorably of the methods of chemical sterilization of drinking water, as recently set forth unofficially by government experts. Typhoid fever cases for the past week were 359, a slight reduction from the figures of the preceding seven days.

Tumors of the Carotid Body.—The report of a careful study of the embryology and histology of the carotid body and also of a tumor of that structure was made at the meeting of the Philadelphia Pathological Society April 14, by Dr. John Funke. The body in question was probably first mentioned by Haller in 1743. It is situated at or near the bifurcation of the common carotid artery, in size approaching that of a grain of rice. The views of different writers regarding the histology of the body are very various. Dr. Funke does not find the body present so often as is commonly stated; he found it in only one of eight fetuses. In three cats, one guinea-pig and one rabbit no such structure could be found. In one fetus a cervical ganglion occupied the usual position of the body, this fact being determined only after a careful microscopical examination. In the fetus possessing the body it was found attached to the common carotid 6 mm. below its bifurcation on one side; on the opposite side it was on the inner aspect of the external carotid five-tenths centimeter above the bifurcation. The bodies were 7 mm. in diameter and attached to the sheath of the vessel by a delicate pedicle. Histological study indicates that there is a relation between the cells making up the carotid body and the vessel itself; the writer is of the opinion that the lobules of the gland are produced by the proliferation of the endothelial cells of the blood vessel. Dr. Funke finds in the literature the reports of 13 undoubted cases of tumor of the carotid and one that is probable but not proved; to these he adds one hitherto unreported case. This patient was a male, aged forty-eight years, operated on at the Jefferson Hospital by Dr. W. Joseph Hearn. The tumor was on the right side, of six years' duration and of slow, continuous growth. To remove the tumor it was necessary to remove portions of the common, ex-

ternal and internal carotid arteries and of the jugular vein. The patient afterward developed headache, became irrational and finally died of general debility nine weeks after the operation. The tumor proved to be a perithelioma. The tumors of the carotid are usually to be regarded as malignant in nature; Reclus alone questions the propriety of operative interference.

CHICAGO.

Music for the Insane.—Music produced by a variety of automatic instruments and including airs, ranging from classic opera selections to the latest ragtime melodies, are to be tried as a curative influence on the inmates of the hospital for the insane at Dunning. Four talking and music machines, a music box and an automatic piano player have been received at the institution. The general superintendent, Dr. V. H. Podstata, believes the music will act even more beneficially on the minds of the patients. The musical instruments, which, with a supply of games, and the moving picture machine, were purchased out of a fund of $1,100 secured by donations, are later to be distributed to the various wards of the hospital and kept in use at all times. It is thought that these entertainments will act as a diversion, taking the patients' minds off their broodings and melancholy thoughts.

Land for Hospital.—Land has been bought for Chicago's great hospital for the treatment of infectious diseases, founded by Harold McCormick and his wife, who is a daughter of John D. Rockefeller. John A. Markley has sold to Mr. McCormick the one-fourth block of land at the southwest corner of South Park avenue and Fifty-third street, for $40,000, and a deal is under way for the purchase of the remainder of the block. Although no definite announcement has been made, it is believed the hospital buildings will cost $500,000, while aside from this there will be a heavy endowment. Dr. Ludwig Hektoen will doubtless be the medical director of the institution, which will be in affiliation with the University of Chicago.

The Prevention of Tuberculosis.—Dr. Arnold C. Klebs recently addressed the Hull House Woman's Club, and among other things, "sleep with your bedroom window open," was a bit of advice given by him. Continuing in his plea for fresh air, he said that the germ of tuberculosis can grow only inside an animal. Outside it can maintain existence a year but cannot grow. Warm conditions indoors are a paradise to the germ. If exposed to the sun and wind, it dies. He pronounced as a fallacy the generally accepted idea that tuberculosis is inherited, and that it may be best treated in the dry air of high altitudes. Tuberculosis can be cured just as well in Chicago as in Colorado or Arizona. Climate has no material effect upon it. High altitudes may do individual cases good. A change of scenery sometimes is advantageous. The disease is not inherited. There have not been more than twelve well authenticated cases of the inheritance of the disease in medical history. Children may be born of parents both of whom are consumptives, and not be infected. Wholesome food comes next to fresh air as a preventive. Cleanliness is another great factor. Great danger of tuberculosis infection lies in milk. Every home should Pasteurize its milk.

Fight for Pure Milk.—The expiration of milk dealers' licenses with the necessity for applying for renewals next month furnishes an opportune occasion for searching out unsanitary dairies, and for enforcing rigid compliance with the requirements of the ordinance governing the sale of milk in Chicago. The Superintendent of Milk Inspection is making preparation to take full advantage of this opportunity. In former years it has been the practice to issue licenses first and inspect afterward. A new policy is to be inaugurated. Everyone of the 3,500 dairies which furnish milk to Chicago will come under the searching eye of an inspector before the end of this month. Dealers who do not come up to the sanitary requirements of the city milk ordinances will be denied licenses. This rule is to embrace all places where milk is kept for sale or for purposes of sale to agents, whether they are actual dairies or not. To make the preventive campaign more effective, the inspectors will insist on the sterilizing of all milk bottles. This, with rigid inspection of the sources of supply and the good work of the Pasteurizing plants, should insure a high grade of milk for consumers during the coming summer.

Presidency of University of Illinois.—Dr. William A. Evans, head of the department of pathology of the College of Physicians and Surgeons, has been brought forward by a large number of the leading business and professional men of Chicago as a candidate for the Presidency of the University of Illinois. For several years he has been head of the pathological department of the University of Illinois, and is admirably equipped for performing the functions of this high office. He is in the forefront of every progressive movement, not only in the field of technical research, but in great public matters that tend to better conditions of life in every direction. Dr. Evans is backed by such men as Drs. Frank Billings, John B. Murphy, Fenton B. Turck, Victor C. Vaughan, etc., as well as by distinguished lawyers, business men, etc.

Unity of Action Sought.—Closer affiliation between the Chicago Medical Society and the dental, homeopathic and eclectic professions is the object of a Committee on Public Relations, which the Chicago Medical Society established last Wednesday evening, April 13. In urging the adoption of these amendments to the constitution which will establish this new committee, Dr. Evans stated that the dental profession had already been approached on the question of closer relations among the various branches of the healing art, and the proposition met with favor. It was essential to secure unity of action on all questions of public policy. The amendments were adopted by unanimous vote.

Mortality from Nervous Diseases.—According to the weekly bulletin of the Health Department, comparing this decade with the previous one, there is shown a decrease of 40.2 per cent. in the mortality from all forms of nervous disease, and of nearly 60 per cent. in the deaths from convulsions. Better hygiene of child life, better milk supply, better knowledge among mothers, account for this latter reduction. The Health Department remarks that it is not so obvious what has caused the reduction of more than one-fourth in the deaths of adults from nervous diseases.

Exudates and Transudates.—Dr. Joseph L. Miller read a paper on this subject at the last meeting of the Chicago Pathological Society. He said that points of difference reported between exudates and transudates are size of erythrocyte present, reaction of fluid, presence of nucleo-albumin, specific gravity and amount of albumin, and character of cells present. Size of the erythrocyte no value, as percentage of salts is the same in exudates as in transudates. Both fluids acid to phenylphthalein, exudates having

a higher degree of acidity, but not of sufficient constancy or degree to be of diagnostic value. Nucleo-albumin present in exudates; not present in transudates, but not constant, as in some pleural exudates of the writer's no nucleo-albumin was present. Variations in specific gravity chiefly due to varying amounts of albumin present, as salts show little fluctuation. Specific gravity and albumin depend upon the intensity of irritation, amount of albumin in the blood, tension of the fluid, amount of resorption, blood pressure, and possibly the presence or absence of icterus. An exudate may have a low specific gravity, due to associated anemia or cachexia, or to presence of associated transudate from local venous stasis, or associated icterus. Transudates may have high specific gravity due to associated inflammation, high tension of the fluid, presence of resorption, the salts and water disappearing more rapidly than the albumin. For these reasons, specific gravity is not a reliable index of the nature of the process. The only accurate method of determining the amount of albumin is by estimation of total nitrogen, or weighing dried albumin; bulk methods, as Esbach's or Purdy's, are extremely unreliable; much more accurate is the formula of Reuss. Percentage albumin $=\frac{3}{8}$ (sp. gr., 1,000) — 2.8. This is possible, on account of only slight fluctuation in the solids, except the albumin. Cytodiagnosis of very limited value.

Syphilis as a Cause of the Neuroses.—At a joint meeting of the Chicago Medical Society and Chicago Neurological Society, held April 13, Dr. L. Harrison Mettler read a paper on this subject. He said that the association of syphilis and functional nervous troubles had long been noted. The relationship of cause and effect between them was not so well established. On the one hand, we are not in possession of accurate knowledge as to just how the syphilitic virus affects the neurones so as to cause them to functionate abnormally; nor, on the other hand, do we know just exactly what is meant by a neurosis, its histopathology and pathogenesis. If we could solve positively these two questions the relationship of syphilis to the neuroses would be obvious. In regard to the action of the syphilis upon the neurones, the author argued that it was both direct and indirect. In the direct way it somehow disturbed the normal physiochemical activity of the neurone by a direct poisoning of its molecular contents. In the indirect way it affected the nutrition of the neurone by changing the nutritive value of the blood or limiting the blood supply by setting up disease, with all its well-known consequences, in the vascular walls. Pathologists and syphilographers were fairly well agreed that syphilis can and does thus directly affect the cellular contents, so as to disturb the functions of these cells. Moreover, the relationship of syphilis to the so-called parasyphilitic diseases, as well as its rôle in the latent form of predisposing cause to many of the organic diseases, both indicate that it can influence deleteriously the intimate structure of the nerve cells. This clears the way for the acceptance of the belief that syphilis can provoke a neurosis. All irritative and pressure symptoms caused by the inflammatory products of organic syphilitic lesions, though functional in character, the author regards as physiological rather than pathological, and omits from consideration. He adopts the view that the basis of a true neurosis is a constituent change of some sort in the nerve cells; for, as he affirms, a disturbance of function sufficient to be recognized as a disease, with the preservation of normal structure, is a logical contradiction. A neurosis, therefore, is essentially an organic disease, and is as likely to be the result of a syphilitic as of any other form of infection. In saying this, however, the author was mindful of the fact that nearly all of the earliest manifestations of the syphilitic organic diseases were functional in character for a time, hence care must be exercised in making the diagnosis, for a syphilitic neurasthenia sooner or later shows signs of a meningitis, a functional paralysis becomes an organic paralysis, or a syphilitic chorea reveals signs of Bechterew's cerebrospinal focal sclerosis. After discussing in detail syphilis in its causal relationship to neurasthenia, hysteria, the traumatic neuroses, epilepsy, migraine, chorea, functional paralyses, paralysis agitans, neuralgia, central torticollis, spasms from local ischemia, paralyses of single nerves, and various other functional and convulsive disorders, the author draws the following practical conclusions: (1) Syphilitic infection can produce a pure neurosis. Most of the neuroses so produced, however, are but the preliminary indications of gross organic syphilitic disease of the nervous system; (2) Syphilitic neuroses are as much syphilis of the central nervous system as are the organic syphilitic diseases, and they call for the same thorough antisyphilitic treatment as the latter do.

GENERAL.

Detroit Doctors at Stearns' Laboratories.—Last week the wooden anniversary of the Frederick Stearns' Biological Laboratories was held and several hundred Detroit physicians were the guests at the celebration. Open house was kept all day and there was an almost uninterrupted stream of visitors in response to the unique wooden invitations sent out a week before. All classes were represented, from gray-haired surgeons and specialists of more than national fame to young prospective graduates of 1904, including, of course, a fair proportion of ladies. The regular work of the department was carried on as usual, affording the visitors an opportunity to see in actual operation all the processes used in the production of diphtheria antitoxin, streptolytic serum and glycerinated vaccine. Perhaps nothing caught their fancy more than the modern operating rooms, rivaling those of first-class hospitals, for most physicians are great sticklers for asepsis, knowing its importance. They admired the extensive brick stables, where every provision is made for the care and comfort of 120 horses yielding life-saving serums. From this also was gained an idea of the development of the business, which five years ago was started with but three horses. There were many expressions of gratification at the abundant evidences of the care with which every step is safeguarded in the manufacture of serums and vaccine. A buffet luncheon was served in the travelers' annex, and wooden souvenirs were distributed.

Suicide.—"In an instructive article contributed to the *Independent*, Mr. George P. Upton," according to the *Times*, "perhaps the best unofficial authority in this country on the subject treated, shows that within the past thirteen years 77,617 people have committed suicide in this country. In 1902 fifty cities furnished 2,500 cases of self-destruction, out of a total of 8,132 for the entire country. Of the 77,617 suicides in the thirteen-year period, 57,317 were males and 20,400 females. The greatest ratio of increase is among young women under twenty-five years of age. Another curious fact is the increasing number of children who kill themselves. Of the methods chosen for ending life it is curious that a very large proportion select carbolic acid. It is cheap and easily accessible, no doubt, but it must cause an extremely painful death, giving the victim a brief period

of intense suffering while the vital organs are being destroyed by corrosion. The suggestion that the sale of carbolic acid should be placed under the same restraint as other deadly poisons does not seem to promise much. So many other and, for that matter, easier modes of self-destruction are available that to cut off one would probably not affect the net result appreciably. Prior to 1894 more suicides died from bullets than from all other agencies combined. Since then poison seems to have been preferred, with carbolic acid a favorite. The remainder is divided between hanging, drowning, the knife, jumping from windows or roofs, gas, fire and dynamite, while as many as 800 selected the expedient of throwing themselves in front of locomotives. · These are gruesome statistics. The lesson to be learned from them depends largely upon the point of view. For some its moral, for others its ethical, aspects predominate. For all it must mean that an increasing percentage of people of a least average sanity find life a bore, and, for one or another of an almost infinite variety of morbid and sophistical reasons, choose to end it. The more complex our civilization and the greater the opportunity for failure and disappointment, the stronger the tendency to self-destruction."

Vivisection: Two Views.—Any one who has followed up the arguments of the anti-vivisectionists during the past few years is prepared for any sort of surprise in the way of syllogisms and sophistries; and so commonly have well-meaning but misinformed members of the clergy engaged in this crusade that upon seeing an article by the Rev. Mr. So-and-So upon the subject immediately begins to draw more or less accurate deductions. A recent number of the *Outlook* contains two articles under the above caption,—one by the Rev. Wm. Lawrence, Bishop of Massachusetts; the other by Albert Leffingwell, M.D., Director of the Vivisection Reform Society. Upon giving each of these a careful reading one met with two surprises: the broad, sensible, and exceedingly tolerant view of the Bishop; and the less broad and somewhat restrictive view of the physician. The Bishop thinks that much of the agitation against vivisection is extreme because no one, even the most bigoted, hesitates to allow animals to suffer pain in procuring his daily ration of fowl, pork or beef. He says, "For the life and welfare of men animals must be sacrificed; we all accept this fact when we sit down to our Sunday roast beef." But in thinking that everybody is agreed that some vivisection is necessary he evidently is too liberal in his interpretation of facts. There are some people who even claim that they would rather be tortured themselves than see a dog have a canula thrust into his veins under the influence of an anesthetic; but of course the test is not applicable and hence the argument becomes a fairly good one on the ground of its extreme negative character. In Bishop Lawrence's experience operations on the lower animals have been skilfully and carefully done and with the least possible pain and he sees no need for the appointments of laboratory inspectors, so commonly advocated by the humanizers; for there are no secret operations and any sensible person can see what is being done for himself by tapping at the experimenter's door. Dr. Leffingwell does not condemn the practice as a whole but believes in legal regulation. His confidence in mankind is certainly not remarkable, for he thinks that "We cannot depend to-day upon our superior humanity" to make vivisection as painless as possible, and one can scarcely believe that "Some of the worst vivisections recorded in history have been made in an American laboratory within the past ten years." The reporter would be glad to know, as a matter of curiosity, where that laboratory is located; for it must surely be unique in being the chief offender, and again, not to quibble about the use of words, it would be interesting to know where to look for a history of vivisection in which his facts are recorded. But when one reads that "Brown-Séquard was one of the most cruel vivisectors that ever lived" he is inclined to cast a shadow of doubt on every statement in the entire essay. He opposes the good Bishop also, both in theory and actual fact, when he speaks of the "Veil of secrecy behind which vivisection is conducted." Such cases must be extremely few and the writer has never known a single instance where he might not have had an opportunity to visit the laboratory and study the methods employed there in detail. To restrict the practice according to the reformer's idea "Free admission should be accorded all clergymen, physicians and State legislators." Each laboratory should have a responsible director, and all experimenters should be obliged to obtain a State license. The results from each institution should be embodied in a report as to the number and kind of animals operated upon, the object of each experiment and its result to the animal. It is needless to say that this method if adopted would be cumbrous, very expensive, and quite unnecessary. In some cases it might be advisable to warn new and inexperienced operators against thoughtlessly giving pain, but an experimental laboratory is usually under the supervision of a competent investigator, who, even in his great desire for the advancement of science, would scarcely stand by and hear the outcries of an animal in pain. This might have been the case before the era of anesthetics but it is not true now. To the minds of liberal people everywhere the remedy of Bishop Lawrence against this so-called "evil" is sufficient; viz., "The great safeguard against cruelty in vivisection is the high professional spirit of doctors and investigators."

The Beverage Bill for 1903.—"Prosperity seems to lead to an increased use of stimulants," says an article in a recent issue of the *American Grocer*, and, summing up the nation's drink bill for the year ending June 30, 1903, the total retail cost of alcoholic and other stimulating beverages is estimated at $1,451,633,379. This is a considerable advance over the average annual cost for five years before, $1,293,903,358. On the basis of 80,372,000 inhabitants in the United States, the record shows an expenditure for stimulants of $18.15 for each person. The consumption has largely increased in the milder sorts, such as coffee and beer, with coffee in the lead, and while alcoholic drinks to the value of $1,242,943,118 have been taken, the non-alcoholic stimulants—coffee, tea and cocoa—amount to $200,000,000 more. Coffee is in the lead, $156,690,261 being the amount spent for it. For tea $45,000,000 was spent, and for cocoa $7,000,000. Coffee outstripped all the others, according to the following table:

	Gallons.
Coffee	1,566,902,614
Beer	1,449,879,952
Tea	450,000,000
Spirits and wines	157,130,628

One-tenth of a gallon per capita increase in the use of spirits is the largest recorded from one year to another since 1900; 148,206,875 gallons were distilled, and the consumption, including fruit and imported spirits, was 117,252,148 gallons. Of this the whisky bill is the greatest. Beer, the popular beverage next to coffee, had in 1903 the highest consumption on record; 18.04 gallons are put down to each person, a gain over 1902 of 0.55 gallons. Eliminating those who do not drink beer, it is estimated that the average person who lingers over the stein consumes from 90 to 100 gallons in a twelvemonth.

Prosperity may be the cause for the opening of more bottles of imported wines than ever and a serious falling off in the consumption from the home vineyards. The

table for the two years past is interesting by comparison and is as follows:

	Domestic. Gallons.	Imported. Gallons.
1902	44,737,244	5,017,159
1903	32,631,154	6,088,201

Leading all other nations of the world, the United States consumes nearly one million pounds of raw coffee every year. The average for the last three years has been 910,987,576 pounds.

With the exception of 1897 the imports of tea were last year the largest on record. Conservative estimates on the brewing of the 104,632,260 pounds imported place the decoction as 450,000,000 gallons, worth $45,000,000.

OBITUARY.

Sir Henry Thompson, Bart., the distinguished surgeon, died April 18. He was born in August, 1820. He is succeeded in the baronetcy by his son, Henry Francis Herbert Thompson. Sir Henry Thompson was created a baronet in 1899. He was surgeon extraordinary to the King of the Belgians, consulting surgeon to the University College Hospital, London, and Emeritus Professor of Clinical Surgeons. He was born in Framlingham, Suffolk, August 6, 1820. He was graduated in medicine at the University College, London, where he won honors. He was the author of numerous papers on scientific and surgical subjects which are generally accepted as authoritative, and also wrote two novels, "Charley Kingston's Aunt" and "All But." He was known also as a painter of ability and a deep student of astronomy.

Dr. Wilbur F. Nutten, one of the best-known medical practitioners of Western New York, is dead at his home in Newark, N. Y., aged sixty-four years. Death resulted from heart failure. Dr. Nutten was a graduate of the Medical College of Physicians and Surgeons of New York City.

CORRESPONDENCE.

MEDICAL LEGISLATION IN NEW YORK.

To the Editor of The Medical News.

Dear Sir: The legislature has adjourned, and both the Optometry Bill and the Osteopathy Bill have failed to become laws. There never was an effort made to secure legal recognition by any of these peculiar practitioners which had in it anything like the force of the Opticians' Bill of this year. In the beginning of the session the reports which I received from various quarters seemed to indicate that the measure would become a law. But thanks to the support given the Committee on Legislation by the medical profession in all parts of the State, what seemed to be defeat for us has been turned into victory. I have no doubt that the medical profession can, through its representatives, control legislation affecting the medical laws, and the public health generally. In my experience I have found the various members of the legislature not only willing but anxious to learn the views of our profession, and the majority of them are willing to be guided by our advice.

I want to thank you for the very great aid you gave our Committee, and to express the hope that sometime in the future when the necessity again arises, we may feel at liberty to call on you for the same kind of aid. Again thanking you, I am,

Very truly yours,

Frank Van Fleet,

Chairman of the Committee on Legislation, of the Medical Society of the State of New York.

SOCIETY PROCEEDINGS.

THE AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS.

Fourth Annual Meeting, held in New York City, April 1 and 2, 1904.

(Continued from Page 766.)

Case of Glioma of the Sella Turcica.—Drs. E. E. Southard and Frederick H. Howard presented this case with photographs of the macroscopic and microscopic appearances of this tumor which Dr. Southard said had probably developed in the posterior lobe of the pituitary body.

Micrococcus Flagellatus.—This was the name given by Dr. O. Klotz, in a paper read by Dr. Adami, to a hitherto undescribed organism found in the spleen and liver, but not in the blood of rabbits during an epizootic among rats and rabbits, which he had observed.

Blank Cartridges and Tetanus.—Dr. David H. Dolly, after making careful examinations of large numbers of cartridges made by several different manufacturers, stated that he had found a tetanus like bacillus, but in his efforts to cultivate the tetanus bacillus from the cartridge he had failed, but that he had produced typical tetanus in rats by inoculation, and this he thought was sufficient evidence that the wads from which he made the inoculation contained the tetanus bacillus. He also obtained by cultivation the *Bacillus pyogenes capsulatus*. The powder, he said, was sterile.

Staphylococci in Systemic Infections.—From a study of almost four hundred and fifty cases of sepsis observed during a period of six years, Dr. Emanuel Libman, of New York, had come to the conclusion that the *Staphylococcus aureus* played a very important rôle in systemic infections, almost as important as that of streptococci. The *Staphylococcus albus* played, he thought, a very small rôle, seeming to be in the main an original invader. The staphylococcus cultures he had found only once in the blood, in a case of osteomyelitis, but he considered the finding important because it proved that the organism could cause a systemic infection. He had seen no case in which the finding of the *Staphylococcus albus* in the blood had been followed by a metastatic deposit in which the organism could be found. In the severe cases of infection by the staphylococcus aureus the organism was usually found in the urine. In several cases, multiple abscesses of the skin were found. These were most profuse in the scalp. Of the 26 cases in which the *Staphylococcus aureus* was found in the blood seven recovered.

Differentiation of Flagellar and Somatic Agglutinins in Motile Bacilli.—Dr. Henry G. Beyer, of Boston, presented the work done by Dr. A. L. Reagh and himself. The existence of flagellar and somatic agglutinins was confirmed not only through the employment of motile and non-motile cultures obtained from hog-cholera bacilli and the sera produced by them, but also through exposure of either the cultures or their corresponding sera to definite temperatures and observing the results of agglutination produced by such modified fluids. It was shown that the flagellar and somatic bodies found in the hog cholera bacilli corresponded to the Alpha and Beta bodies found by Ioos in the bacilli of Eberth, notwithstanding the fact that these bodies in the hog-cholera bacilli proved to be much more resistant to temperature than the corresponding bodies in the typhoid bacilli. Immunization experiments made with cultures heated at different temperatures resulted, moreover, in showing that the heat, while

preventing agglutinations from becoming apparent, did not destroy the power of cultures of producing agglutinins in the body of the animal as evidenced by the reactions of the sera produced with them. This interesting fact was explained on the principle of Ehrlich's theory of agglutinins, the heat being assumed to convert the agglutinogenic substances contained in the cultures into agglutinins and thus to prevent visible agglutinations without, however, destroying the substances themselves nor their power of producing agglutinins in the body of an animal exactly the same as unheated cultures will do.

Hemangio-sarcoma of the Skin of the Finger.—A case reported and described by Dr. W. McN. Miller, of Columbia, Mo. In discussing the tumor, Dr. Miller made the following classification of true blood vessel tumors with respect to the development of the endothelium. (1) Proliferation of endothelial cells in a single layer with dilatation of vessel—hemangioma cavernosum. (2) Proliferation of endothelial cells in a single layer, with new growth of capillaries and vessels—hemangioma simplex. (3) Proliferation of endothelial cells centrally with more or less obliteration of lumen—hemangioma-endothelioma intravasculare. (4) Proliferation of endothelial cells peripherally—hemangioma-endothelioma hypertrophicum. (5) Proliferation of endothelial cells after the manner of all the above given groups. Hemangioma-endotheliobłastoma. He placed the tumor described in the fifth group.

Adrenal Gland Infusion—Effect upon Animal Serum.—This investigation was undertaken by Dr. N. Gildersleeve, of Philadelphia, for demonstrating the effects upon guinea-pigs and on guinea-pigs' erythrocytes in vitrio of the serum of rabbits treated with infusions of guinea-pigs' adrenals, and of the serum of rabbits treated with small quantities of defibrinated guinea-pigs' blood. The immediate symptoms following an injection of adrenal serum into the peritoneal cavity of the guinea-pigs were marked. The animal became stupid and weak, lay on its side or abdomen, the respiration was hurried, and the heart usually rapid. The temperature quickly fell from 1 to 2° below normal, but in from three to six hours rose to normal and the symptoms usually disappeared, and in the course of a few days the animal, to all appearances, recovered from the effects of the treatment. The immediate effect following the injection of serum from rabbits treated with small quantities of defibrinated guinea-pigs' blood (1/1,000, 1/100, and 1/10 c.c.) were as a rule not as marked as when the adrenal serum was employed, but the guinea-pig became weak and emaciated, usually dying in from one to six days, showing marked changes in the blood and certain other tissues, notably the liver, kidneys and lungs, the effects to a certain extent varying according to the degree of immunization. Normal serum was employed to control the above experiments. The effects of this were as a rule but slight, in many cases the animals showing no effect of the treatment. Experiment showed that the hemolytic action of rabbit serum on guinea-pigs' corpuscles is increased by the treatment of the rabbits with defibrinated guinea-pigs' blood. Dr. Gildersleeve arrived at the following conclusions: (1) That there is something produced in the tissues of rabbits treated with washed guinea-pigs' adrenals which, when injected into guinea-pigs, produces marked symptoms which are usually transient. (2) That the serum of rabbits treated with repeated injections of small quantities of guinea-pigs' erythrocytes has, when injected, a quite marked destructive action on the blood and certain other tissues of the guinea-pig. This action depends to some extent on the degree of immunization. (3) That the hemolytic action of rabbit serum on guinea-pig erythrocytes in vitrio is increased by the immunization of these animals with small quantities of guinea-pig blood.

Epithelial Tumors of the Skin and Mucous Membranes with Special Consideration of "Carcinoma Basocellulare."—A preliminary report with lantern demonstration by Dr. Joseph C. Bloodgood. He said that in the routine study of epithelial tumors in the pathological laboratory of Prof. Halsted's Clinic in the Johns Hopkins Hospital, since June 1892, he has found from time to time a microscopic picture in which all the epithelial cells resembled the cell of the deeper layer of the epidermis. These tumors have been described in the pathological records as epithelioma of the deeper layers of the epidermis. In some instances the histological picture resembled an endothelioma, but were never considered as sarcoma. No special nomenclature was, however, adopted. Some six months ago he began a systematic clinical and pathologic study of 468 cases of epithelial tumors of the skin and mucous membrane. Very soon he became impressed that this peculiar variety of epithelioma was not uncommon. Fortunately at this time Krompecher's monograph "Der Basalzellenkrebs" appeared. At once he found that his descriptions and illustrations were identical with this variety of epithelioma, and for this reason he adopted his nomenclature—carcinoma basocellulare. Among 468 cases of epithelial tumors at least 78 (16.5 per cent.) belong to this group. This tumor arises from the skin and is situated most frequently on the nose (50 per cent., 13 out of 26 cases); skin of body (4 out of 8 cases); skin of upper lip (5 out of 10 cases); chin (2 out of 4 cases); eyelid (12 out of 24 cases); scalp (6 out of 17 cases = 40 per cent.); face and cheek (14 out of 55 cases = 33 per cent.); ear (3 out of 9 cases). In the following regions the tumor is rare: lower lip (4 out of 106 cases. In these four cases the tumor arose from the skin and not from the mucous membrane); skin of lower extremity (2 out of 22 cases); upper extremity (2 out of 19 cases); mucous membrane of mouth (2 out of 29 cases); mucous membrane of tongue (5 out of 53 cases); penis (3 out of 29 cases; in these three instances the tumor originated from the mucous membrane of the urethra near the meatus); skin of neck (1 out of 3 cases). The age of onset is usually after fifty years. The tumor grows slowly. In some instances it remains for months or years as a single lesion. It appears first as a small nodule in the skin. The thin epidermis ulcerates and a scab forms. Beneath the minute area of ulceration there is a narrow zone (2 to 4 mm.) of granulation tissue in which the basal cell alveoli are found. In some cases the disease extends and produces multiple lesions of a similar character. In this instance the surrounding skin is usually indurated. Not infrequently the disease in its growth produces a superficial ulceration which sometimes covers very large areas (6 to 14 cm.). Clinically this is the typical rodent ulcer. The fourth clinical variety appears as a fungous tumor. The elevation of the fungus above the surrounding skin may vary from 5 mm. to 3 cm., but the growth beneath the surrounding epidermis is with the rarest exceptions superficial. The small lesion may remain stationary up to fifteen years, the majority of the larger ulcers have been present over five years, many ten and fifteen years. In a very

few cases, in the more extensive lesions, the condition has become inoperable on account of deep infiltration (3 out of 78 cases). Metastasis to the neighboring lymphatics has so far been observed in only two cases. Up to the present time all the cases subjected to complete excision have remained free from recurrence from periods of a few months (recent cases) up to twelve years. Histologically the small lesion is usually composed of solid alveoli of basal cells: *carcinoma basocellulare solidum*, or the basal cell may show a glandular reticulum and arrangement: *carcinoma basocellulare adenoides*. Quite frequently the two are combined. In the extensive rodent ulcer variety one finds in a stroma of granulation tissue large stellate alveoli, and in the infiltrating parts, minute irregular alveoli, similar to the histological picture of scirrhus carcinoma. For this variety Krompecher has no terminology. In the large fungous tumors the basal cell alveoli are large, tubular in shape. Usually the center of the tubule is filled with degenerated epithelium, colloid or hyaline, or there are definite cyst formations: *carcinoma basocellulare cysticum et tubuliferum*. It is important in practical surgery to recognize this less malignant form of carcinoma of the skin and mucous membrane, because it is unnecessary to remove the neighboring lymphatic glands. A close study of the cases under Dr. Bloodgood's observation demonstrates that complete excision gives invariably perfect results. Many of the cases, over 50 per cent., were subjected to caustic applications before their admission to the surgical clinic, and quite frequently the minute lesion present at the time of the first application of the caustic has, after this treatment, begun to spread. One cannot deny that the small superficial lesion may be cured by the proper application of caustics, but he is convinced that it is by no means as certain as complete excision with the knife. The latter, properly performed, should cause even less deformity. Apparently this form of carcinoma of the skin reacts to the X-ray treatment better than any other variety of carcinoma. For this reason, if the lesion is situated on the nose, eyelid or ear, where complete excision would necessitate mutilation, it is justifiable to give the X-ray a fair trial. There is no danger in the delay, and the treatment in a certain number of cases, apparently, so far, has accomplished a cure. However, where complete excision is possible without mutilation, this method undoubtedly is the one of choice. Even in the very extensive rodent ulcers apparent healing has taken place after prolonged X-ray treatment.

Comparative Morphology of Vaccine Bodies.—Dr. James Ewing, of New York, made a preliminary report on the comparative morphology of vaccine bodies in which he showed some interesting lantern pictures of cellular and nuclear and nucleolar changes in the tissues at the point of vaccination in the skin in measles and in diphtheria.

Xanthoma.—Dr. Guthrie McConnell, presenting a case for Dr. Joseph McFarland, of Philadelphia, said that the patient from whom the specimens were taken suffered from widespread xanthoma of the face, hands, body, feet, and there was also a nodule situated within the mucous membrane of the lip at the base of the lower central incisors. Patient is an American boy of eighteen years, white; is greatly stunted in his growth and has occasional attacks of jaundice. The material examined consisted of two small masses removed from the anterior aspects of both knees. On the surface of the growths were numerous small yellow areas. Most of the changes observed in the epidermis were atrophic in nature. The rete mucosum was thin and the papillæ were in places entirely absent. The chief changes were in the reticular layer and consisted of its invasion by cells that were very characteristic. These cells, designated by many as xanthoma cells, are large and at first glance resemble very closely those of the sebaceous glands. They are sharply defined by thin but distinct walls and are flattened by mutual contact. In the central portions of the large aggregations, where they were presumably oldest, they were largest and contained the greatest number of droplets of what appeared to be fat. As one passed from the central to the peripheral portions of the cell masses it was found that with rare exceptions they possessed no definite limitations, but extended as a continuous reticulum throughout the fibro-elastic framework of the cutis vera. The peripheral extensions consisted of smaller cells of cuboidal shape, with more distinctly vesicular nuclei, with greater affinity for the stain than those of the older central cells, and contained fewer and smaller fat droplets. In those specimens that were stained to show fat the results were not satisfactory. There were in several areas numerous fine granules that to some extent showed color change, but it was not restricted to those portions that corresponded to the xanthoma cells nor was the reaction itself characteristic. The opinion of the majority of observers is that the granules are indeed fatty in nature. Is more certainly fat in xanthalasma than in the other forms of xanthoma. The cellular extension did not invade the subcutaneous tissue. One of the most striking features was the total absence of sebaceous glands. No structures that could be definitely made out as such were present. New formed capillary blood vessels were quite numerous. The first theory that suggests itself as to the histogenesis of these cells is that they are derived from pre-existing sebaceous glands. This is, however, disproved by the frequent occurrence of the xanthoma masses in the mucous membranes and in internal organs where there are no sebaceous glands. The second theory, which seems to have no foundation, is that the growths result from changes in the muscle fibers. It is finally held that the cells are of endothelial origin and are derived from the cells normally present in the lymph spaces and channels. The assumption of fat is not known to be a peculiarity of endothelial cells. The source of the fat globules is of great importance. Either they must be formed within the cells or must be conveyed to them. The general appearance would suggest that the fat is formed in the xanthoma cells and by their activity. The magnitude of the cellular characteristics and their reticular distribution make it almost inconceivable that they are cells normal to the parts which have become infiltrated with fat. All appearances justify belief that the cells belong to some genus whose members have a normal fat-forming or fat-storing tendency, and that these cells so endowed multiply and penetrate into the tissues and continue in all directions their normal tendencies. Every evidence is in favor of the connective tissue origin of these cells, but that they are endothelial in character seems to us very doubtful. According to Waldeyer, Virchow and Kaposi, we have a process going on in the xanthoma that is analagous to the formation of normal adipose tissue. They believe that the new cells grow to a considerable size and develop processes so as to form the fusiform and stellate corpuscles of connective tissue. These cells are liable to undergo fatty degeneration, but the process is slow and less destructive, and resembles the normal transformation of ordinary connective into adipose tissue. Török concludes that the xanthoma placque is composed of adipose cells inter-

rupted in their progress to complete evolution and that it is not a tumor but an excess of growth.

Trypanosomiasis.—In a report of experiments with the genus of protozoa, *Trypanosoma*, Dr. P. Ehrlich, of Frankfort-a.-Main, said that he had produced a compound which possessed decided specific action upon the *Trypanosoma equinum* (the protozoon of mal de caderas). Mice infected with this parasite were rendered temporarily immune by this substance which he has named "Trypannoth." Further experimentation he hoped would discover a compound which would cause a reaction on the part of the organisms of other animals sufficient to kill the parasite. Professor Ehrlich compared the action of the various substances (arsenic and benzopurpurin) which had been found to produce what had proved a temporary immunity to the Trypanosoma, to the action of quinine in malarial infection.

Lymph-nodes in Hemangioma of the Orbit.—Dr. Aldred Scott Warthin, of Ann Arbor, Mich., presented a large number of lantern slides illustrating this subject and said that in a tumor of the orbit which had grown slowly for twenty-three years and which microscopically presented the structure of a hemangioma cavernosum, there were found numerous typical lymph-nodes with characteristic germinal centers. The nodes were so numerous that eight to twelve could be found in a single section. The development of such nodes and germinal centers could be easily traced. Two modes of formation were seen. In one there was at first a proliferation of the endothelium and perithelium of the blood spaces forming a reticular network extending across the lumen of the blood space. In this reticulum lymphocytes gradually collected, and from the further proliferation of the endothelium at certain points germ centers were formed. Free red blood cells were found in the spaces of the reticulum, and about the follicles a more or less perfect blood sinus was developed. The new nodes therefore presented the structure of hemolymphatic tissue rather than of ordinary lymphatic. In the second mode of formation there was at first a proliferation of the endothelium of a capillary in the connective-tissue trabeculæ separating the blood spaces. As a result of this proliferation there was first formed a typical germ center about which the lymph follicle gradually developed, the lymphocytes apparently arising from the germ center. All possible transition stages of both modes of formation could be seen. The formation of the lymphoid tissue appeared to be entirely secondary and not to constitue an integral part of the tumor structure. Stasis probably plays the chief part in its development, and with this factor there is probably associated a more embryonal character of the endothelium of the blood spaces of the tumor.

The Occurrence of Myeloid Changes in the Hemolymph Nodes.—(Dr. Warthin.) In a number of cases of leukemia and in one case of fatal anemia following prolonged and repeated small hemorrhages from the nose there were found in the retroperitoneal hemolymph nodes changes that could be interpreted only as of a myeloid character. Neutrophile and eosinophile myelocytes, bone-marrow giant cells as well as a great variety of non-granular mononuclear forms and atypical lymphocytes were present. Given sections of the nodes could not be distinguished from given sections of bone-marrow. In the leucemic cases the process was regarded as of the nature of metastasis, in the hemorrhagic case as a reversion to an embryonal form of blood-formation. While under normal conditions mononuclear eosinophile and cells resembling bone-marrow giant cells are almost always to be found in the hemolymph nodes, there is no reason to believe that these nodes ordinarily play any part in hematopoiesis. The occurrence of such marked myeloid changes in the nodes as found in the case of fatal anemia is probably to be regarded as of the nature of a compensation for the bone-marrow.

Eosinophilous Transformation of Lymphocytes; the Formation of Eosinophiles in the Hemolymph Nodes; the Relation of Eosinophiles to Hemolysis.—Dr. Warthin said that mononuclear eosinophiles are almost constantly present in small numbers in the hemolymph nodes, and under certain conditions they may be found in these organs in great numbers. In such cases all possible transition forms between lymphocytes with eosinophile granules and the polymorphonuclear eosinophiles are seen. The morphological evidence may be taken as favoring the view that eosinophile polymorphonuclears may be found from lymphocytes. Such findings oppose the generally accepted view of Ehrlich as to the origin of the eosinophile cell. In all cases in which there is hemolysis of the eosinophiles of the hemolymph nodes are increased in number. In some instances nearly all the cells of a node may show eosinophile granules. The relation of the products of the destruction of the red cells to the formation of the eosinophile granules is not a direct one, but it is possible that the granules represent further elaborated products of red cell disintegration.

Hemolymphotoxin.—Dr. Warthin read this paper for Mr. Harro Woltman, of Ann Arbor, Mich., in which he said that a comparative study had been made of the effects produced by the injection of the sera of geese made immune to sheep's blood, spleen, bone-marrow, lymph glands and hemolymph nodes. In the sheep injected with such immune sera the changes in the blood as well as in the tissues are identical in kind but differing in degree. All the sera were hemolytic, lymphotoxic, myelotoxic, and endotheliotoxic, the results of the injections varying only in intensity. The sera of geese made immune to injections of emulsions of sheep's hemolymph nodes produced a more intense action than the sera of those made immune to spleen, bone-marrow, etc. The hemolymphotoxic serum caused greater hemolysis than serum immune to sheep's corpuscles. When heated the hemolymphotoxic serum lost the greater part of its hemolytic power, but not all. Injections of such heated serum caused a marked proliferation of the endothelial phagocytes in the sinuses of the hemolymph nodes.

Action of Antistreptococcus Serum.—Dr. D. H. Bergey, of Philadelphia, read a paper on studies made by him on the action of antistreptococcus serum.

The Biochemistry of the Tubercle Bacillus was discussed by Dr. P. A. Levene, of New York, and he also read a report of work done by Dr. L. B. Stookey and himself on Autolysis.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, February 2, 1901.

President *pro tem.*, Joseph Fraenkel, in the Chair.

Case of Huntington's Chorea.—This was presented by Dr. J. Ramsay Hunt. The patient was a Hungarian, thirty-three years old, the youngest of seven children. He had been a resident of the United States for six years he had twiching movements of the upper extecedents could be elicited. From the patient's sister it was learned that he was extremely dull, even as a child, and lacked interest in his studies. For the past three years he had twitching movements of the upper extremity, confined chiefly to the fingers and wrist of the left arm. Similar muscle-twitching was also present in

the left lower extremity, consisting of slight flexion movements in the ankle and toes. Occasionally, the left quadriceps extensor contracted, elevating the patella. The face was the seat of irregular grimaces and twitchings, and the latter were also present in the tongue, interfering at times with speech. These movements were at no time violent, and seemed to be increased by voluntary movements of the parts. The left upper extremity was complained of by the patient as feeling cold and heavy, and interfering with finer movements of the hand, such as eating. Mentally, the patient was dull. He was cranky and irritable at times, careless in his dress, and was unable to obtain any employment. At times, he had mild acute mental symptoms and apparent hallucinations. He had complained of frontal headaches at intervals since the onset of the trouble. Otherwise, the examination proved negative. Muscular power was unimpaired; there was no ataxia; no sensory disturbances. The pupils and all reflexes were normal. He had never had a convulsion.

Dr. Hunt said that the character of the twitchings, although slight and limited to the left side, resembled those observed in Huntington's chorea. The constancy of the symptoms, the pronounced and progressive character of the mental changes, even in the absence of heredity, pointed very strongly to a degenerative form of chorea. An initial psychosis with secondary motor manifestations would deserve consideration in the differential diagnosis.

Case of Multiple Cerebellar Tumors.—Dr. B. Sachs presented the specimen of a case of multiple cerebellar tumors. These had given rise to the usual symptoms of a cerebellar neoplasm. There was marked ataxia of the left upper extremity, and a tendency to fall to the left. The skull was trephined for the purpose of relieving pressure and preventing the development of complete blindness. The patient died from shock a few hours after the operation.

Cerebrospinal Lues (Syringomyelia Symptom Complex).—This was presented by Dr. Isador Abrahamson. The patient was a male; thirty-five years old; single; a pedler, and a native of Rumania. When he was eleven years old, after a fright, he became blind in the right eye and the vision of the left eye became impaired. Some improvement in sight occurred within two months. When he was sixteen years old he contracted a chancre, with the usual secondary symptoms. He was treated for this disease for one year with both external and internal remedies. He was moderately addicted to the use of alcoholic stimulants, and smoked excessively. About six years ago he developed an abscess on the left side of the neck. This was incised and drained. Subsequently, he suffered from pains in the left upper extremity and left side of face; these were shooting in character and were accompanied by paresthesias over the same areas. Later, he suffered from weakness in the left hand, with beginning atrophy, and his voice soon assumed a raucous character. Five years ago he developed a luetic keratitis in the right eye, which cleared up under insufflations of calomel. About this time swelling of the fingers was first noticed. Two years ago he again had difficulty with his eyes, with temporary blindness, and blueness and limitation of vision. He had frequent attacks of diplopia during the past six years. Since last summer he had repeated crops of vesicles on fingers, with beginning wasting and simultaneous weakness of the right hand. At irregular intervals there was interference with urination, now retention, now slight incontinence. Also some difficulty in defecation, with constipation and diminished sexual power. He suffered from headaches on the left side, with some vertigo and tinnitus aurium and loss of hearing on that side.

Status praesens.—General enlargement of the lymphatic glands, many stigmata of degeneracy, convergent strabismus due to weakness of both external recti; marked nystagmus, rotary in character, especially in lateral positions; eyes prominent; Von Graefe symptom present; pupils irregular, the right being larger than the left. Both light and consensual reactions were sluggish; the accommodative reaction much prompter. Vertical axes of eyes not parallel. Right lower facial innervation stronger than the left; jaw-jerk present; right pharyngeal stronger than the left; pharyngeal reflex present. Hands blue and congested; fingers thickened, with small, rounded vesicles of various size scatttered over them. Thenar wasting, more pronounced on the left side; hypothenar wasting less marked. Reaction of degeneration in some muscles; marked loss of power in hands and forearms; more marked on the left side. Deep reflexes of the uppper extremities diminished. Heart, lungs and other viscera apparently normal. Knee-jerks active, especially the left; likewise the Achilles reflex. Tactile sensibility was practically normal. There was disturbance of the pain sense, chiefly analgesia, over the chest and upper extremities, principally on the left side, and thermanesthesia for both hot and cold over the same areas. Deep muscular sensibility was disturbed in all four extremities. Vision, O. S., 6-200; O. D., 20-200; marked staphyloma posticum; detachment of retina in left eye, downward and outward. The changes were very suggestive of a luetic origin. To sum up, the case was probably one of cerebrospinal lues, presenting the syringomyelic symptom complex, or else it was a case of syringomyelia, plus lues, or possibly of luetic origin. Such cases, the speaker thought, were rather uncommon, and were naturally of considerable clinical importance.

Dr. Sachs, in discussing this case, said he had seen some cases which, while luetic, presented the clinical aspect of syringomyelia. He regards these cases as examples of cerebrospinal lues, not luetic syringomyelia.

Flaccid Luetic Hemiplegia with Atrophies.—Presented by Dr. Abrahamson. The patient was a male, twenty-six years old; married; a Russian pedler. He was an excessive smoker and used alcoholic stimulants in moderation. He had lues four years ago. Ten years ago he had an attack of parasitic alopecia, and six years ago he sustained a severe fall. This resulted in a Colles' fracture and he was said to have been unconscious for a long time. About two months ago he was obliged to remain in bed for three weeks on account of stiffness of the neck, violent neuralgic occipital pains, and headaches, chiefly nocturnal. During the third week of this illness he began to suffer from severe right-sided headaches, with vertigo. Three weeks ago, while in a café, he felt dizzy and staggered as though drunk. He fell to the floor and found that the right side of his body was numb and paralyzed. Speech was also lost. This condition lasted about five minutes, when he apparently again felt normal. A short time afterward he had a second attack lasting five or six minutes, and in the course of two hours he had four additional similar attacks. From the sixth attack, however, he failed to recover; speech was lost for four days and the paralysis still persisted. At the present time there was paralysis of the lower two-thirds of the right face and of the right upper and lower extremities. There were dropped wrist and foot on the right side; flaccidity of the right hand and forearm; also the leg and foot. Decided wasting in right posterior forearm musculature; also, but to a lesser degree, in the right leg. The electrical reactions in the posterior forearm were much diminished; myotatic irritability diminished; sensibility intact; heart normal.

Dr. Abrahamson said that in view of the electrical

changes, the marked wasting, flaccidity and altered myotatic irritability, all occurring within three weeks after the onset of the attack, he felt justified in calling the case a flaccid hemiplegia with atrophy.

Jacksonian Epilepsy of Luetic Origin.—Presented by Dr. Abrahamson. The patient was a male, thirty-nine years old, a shoemaker by occupation and a native of Hungaria. He was married and the father of eight children, of whom six were living. His first wife had three miscarriages occurring about the third or fourth month. The patient had typhoid fever in childhood. He was a heavy smoker and a moderate drinker. He positively denied venereal infection. His present illness dated back to Dec. 15, 1903, when he began to suffer from frequent attacks which were ushered in with a feeling of numbness in the right hand, followed by a drawing in of the thumb, flexion of the fingers and semipronation of the hand. The numb sensation spread to the shoulder, then down to the hip and feet. He complained of weakness of the leg and had to sit down to keep from falling. Speech was also temporarily lost. Each of these attacks, which sometimes occurred at hourly intervals, lasted about fifteen minutes, and were followed by some weakness of the right side and slight dizziness. He also complained of left-sided headaches and slight nausea and epigastric distress at the end of the attack. There was also rolling of the eyes during the attack, and rolling of the tongue upon attempting to speak. No frothing; no biting of the tongue; no diplopia. Micturition and defecation were not affected. There was no loss of consciousness. An examination showed that the right pupil was larger than the left. The pupillary reactions and ocular movements were normal. There was weakness of the entire right half of the body, including the lower two-thirds of the face. There was some exaggeration of the deep reflexes on the right side. The special senses were normal. The eyes showed a beginning papillitis.

The patient was put upon inunctions of mercury and large doses of potassium iodide. At first, the weakness on the right side increased, and a right hemianesthesia of somewhat irregular distribution developed. Subsequently, he improved rapidly, and at the present time he had entirely lost his attacks, the right-sided weakness was much less, and only scattered areas of diminished sensibility were present over the right side.

Arteriosclerosis of Spinal Cord, with Hemorrhage.—This case was presented by Drs. Joseph Collins and Edwin G. Zabriskie. M. H., a fireman, with no particular antecedents, noticed toward the end of 1902 fatigue on exertion, jerking sensations, occasional sharp pains in lower extremities, and a sensation of heaviness, accompanied by difficulty in holding his urine. These symptoms steadily progressed, until he awoke one morning and found himself unable to stand or walk. There was also incontinence of the bowels and bladder. On examination, it was found that he was unable to flex his thighs slowly, and there was slight atrophy of the left anterior and inner thigh muscles. The reflexes were absent; Babinski's phenomenon present. Power in the upper extremities was fair, but he was easily fatigued. There was slight quantitative diminution of sensation in both lower extremities, and a zone of hyperesthesia as wide as the hand above the trochanters. There was slow speech and mental reflex. Also a moderate degree of general arteriosclerosis. Death supervened gradually of cardiac weakness. Autopsy: Macroscopically, there was arteriofibrosis everywhere, only slightly marked in the brain and bulb, but very marked throughout the cord. The vessels were distended with blood, and there was some extravasation into the perivascular spaces. The changes consisted in thickening of the media and propria, with loss of muscular tissue. A hemorrhage was found in the ninth dorsal segment of the cord, involving the right posterior and left anterior horns. There was sclerosis of the glia around the margin of the cord and in the lateral pyramidal tracts. Secondary degenerations were found in marginal portions of the right column of Goll, Gowers and the direct cerebellar tracts on both sides above the lesion, and the crossed pyramidal tracts, and columns of Türck below the lesion. There was no definite degeneration of Schultze's tract or the other descending tracts of the posterior columns, excepting in the lower lumbar region, where a small area in the triangle of Gombault and Phillippe was apparent.

Dr. Zabriskie said it was interesting, in view of the difference of opinion as to the origin of the fibers in the descending tracts of the posterior columns, to note that in this case, although the right posterior horn was almost completely destroyed, the comma tract and areas of Flechsig and Phillippe-Gombault were not involved; this would seem to point to the exogenous origin of these fibers.

Report of Two Cases of Tumor of the Pontomedullocerebellar Space (Acoustic Neuroma) with Operation.—By Drs. J. Fraenkel and J. Ramsay Hunt. *Case I.*—Reported by Dr. Fraenkel. Operation by Dr. Charles A. Elsberg. The patient was a man, forty-eight years old, a theatrical manager, who entered the Montefiore Home on July 1, 1903. One brother was an imbecile; otherwise his family history was negative. His previous personal history was also without bearing on the present condition. He denied excesses and venereal infection. About five years ago the patient first noticed that his hearing on the right side was impaired, so that he had to use his left ear when at the telephone. A year later his gait became staggering and uncertain, and he could not coordinate his lower extremities at all times. The right lower extremity was the first to be affected. The patient did not notice that he swayed to one side more than to the other. Three years ago his gait frequently was like that of a drunken man, and two years ago a transient diplopia was noticed. About the same time the lower extremities became markedly spastic, his sight became impaired, his speech became stammering, and he noticed that he was tremulous when writing or performing any other intentional function with the upper extremities. During the last year, occasional insufficiency of the sphincters was noticed and he was unable to walk without assistance. At no time was there any pain, paresthesia or girdle sensation. An objective examination showed static and locomotor ataxia. Romberg's symptom was present. The patient falls and inclines to the left side. There is slight mental hebetude and occasional emotional explosiveness. There was motor weakness of all four extremities, particularly on the left side; a tactiform unsteadiness of both upper extremities, particularly of the right; loss of position sense in right-sided upper extremity; exaggeration of reflexes, particularly on the left side; Babinski present on both sides, more marked on the left; marked nystagmus; scanning speech; considerable choked disk, with retinal hemorrhages; deafness of the left ear. Six weeks before operation, a paralysis of all branches of the seventh nerve set in, with marked changes of the electrical reactions. The operation for the removal of the tumor was performed by Dr. Elsberg. The patient unfortunately died from what appeared to be an acute uremia thirty-six hours after the preparatory operation.

Dr. Charles A. Elsberg, who did the operation in this case, said that the opening in the skull was made in a rather unusual situation. In most of the operations for a tumor in the posterior fossa, the cerebellum was ex-

posed by the so-called, occipital craniotomy, in which the opening was made in the occipital bone somewhere between the median line and the posterior margin of the mastoid, and below the level of the lateral sinus. For tumors situated in front of the cerebellum, as was the tumor in this case, and for tumors in the anterior and lateral parts of the cerebellum there were several objections to this method of exposure: (1) It was not the shortest route from the surface of the skull; (2) the manipulations in the removal of the tumor must be done by the sense of touch alone; (3) even with the most gentle manipulations the cerebellum was apt to be contused and its tissues lacerated; (4) in the digital examination of the anterior parts of the cerebellum from the under surface of the organ the finger must come in frequent contract with the medulla and perhaps the pons, and the great danger from even slight injury to these structures was well known. Dr. Elsberg said he investigated this subject for the purpose of finding, if possible, a method by which the disadvantages above mentioned would be avoided. Actual measurements on a number of skulls showed that the shortest distance from the surface of the skull to the anterior edge of the lateral lobe of the cerebellum on the same side was measured on a line which ran along the posterior surface of the petrous portion of the temporal bone, and reached the surface of the mastoid 1 to 2 cm. behind the external auditory meatus. The distance from the outer surface of the occipital bone, below the level of the lateral sinus, to the anterior edge of the cerebellum diminished steadily as the measurements were made more and more distant from the median line. These facts showed that the shortest route to the pontomedullary space on the same side would be through an opening made in the mastoid process. If, in the cadaver, an opening was made in the mastoid region and the dura incised, the lateral edge of the lateral lobe of the cerebellum fell away from the posterior surface of the petrous portion of the temporal bone, so that full one-half of that part of the bone could be seen. With only very slight retraction, the lateral lobe could be drawn sufficiently toward the median line so that the auditory and facial nerves could be plainly seen in their course from the pontomedullary cerebellar space to the internal auditory meatus, and even the 9th, 10th and 11th cranial nerves could be seen in part of their course in the posterior fossa. The auditory nerve could be cut close to its origin with a fine scissors without touching the pons or medulla. Dr. Elsberg said he had performed the operation on the dead body a number of times and was convinced of its feasibility. In the living body, where the cerebellum was filled with blood, the same conditions would be found, although to a somewhat lesser degree. This had been demonstrated by Krause, of Berlin, in a somewhat similar operation devised by him in a case in which he cut the auditory nerve in the posterior fossa for the relief of a persistent tinnitus aurium. As was well known, considerable of the lateral parts of the cerebellum could be cut away without causing a permanent disturbance in the functions of this part of the brain. Therefore, this was the part of the cerebellum that could be handled with the greatest safety, and at the same time, could be most easily retracted. From these facts it followed that the approach to the anterior edge of the cerebellum along its outer edge was not only the easiest, but also the route by which the organ was least apt to be injured during manipulations. An examination into the anatomical relations of the parts in the posterior fossa would soon make it clear that when the pontomedullary cerebellar space was approached from the mastoid region along the outer edge of the lateral lobe of the cerebellum, neither finger nor instrument need come in intimate contact with the pons or medulla until the space itself had been reached. It was probable that the correct way to remove tumors from this region was to expose the structures on the central side of the tumor, if possible, and first divide these, and then to work outwards all of the time, away from the pons and medulla. Hence, with this lateral method, the danger of wounding these important structures was reduced to a minimum.

Dr. Elsberg thought it was advisable, in almost all of these cases, to operate in two stages. On Jan. 21, 1904, under chloroform anesthesia, the bone was exposed by a flap of the soft parts, including the periosteum over the mastoid and outer parts of the occipital regions. An opening was then made with the cranial drill, chisel and rongeur, measuring 5 by 8 cm., and extending from above the superior curved line of the occipital bone to within 1½ cm. of the margin of the foramen magnum, and from within 1 cm. of the external auditory meatus to 3 cm. from the median line. In the upper part of the wound the occipital lobe, covered by its dura, was visible, and in the lower part, the right lobe of the cerebellum, covered by its dura. The greater part of the lateral sinus of the right side was thus exposed. The wound was then closed, the flap being sutured back into place, and a voluminous dry dressing was applied. The patient was considerably shocked at the end of the operation, but he reacted well to stimulation. His condition remained fairly good until the second day, when his kidneys ceased to act and he passed into a uremic condition and died in forty-eight hours. The skin-flap was turned back about two hours after death and the dura incised. With the head turned to the side, the tumor could be plainly seen at a depth of from 3 to 4 cm., and when the finger was introduced it was found that the tumor could be peeled out with the greatest ease. It seemed probable that had the patient survived the first operation, the removal of the tumor could have been accomplished at the second operation in a short time and with very little difficulty. After the patient's death it was learned that he had had an attack of acute nephritis, with general edema, some years before, and although the urine had been carefully examined prior to the operation and had showed no evidence of renal disease, it was just to suppose that long-standing kidney trouble was the probable cause of the acute suppression of urine after the operation.

Case II.—Reported by Dr. Hunt. Operation by Dr. George Woolsey. This patient was a pedler, forty-two years old. Six years ago he began to suffer from an annoying tinnitus in the left ear, followed by some impairment of hearing. During the past four years he has had occasional occipital headaches, with vertigo. These symptoms gradually increased in severity and were accompanied by cloudiness of vision. For the past six months there has been unsteadiness of gait. When he first came under Dr. Hunt's observation, the watch tick was not perceptible with the left ear, and the tuning-fork was very faint to aerial and bone conduction on that side. There was paresis of the left seventh nerve, more apparent in its upper branch, with slight quantitative electrical changes. There was paresthesia in the sensory distribution of the left fifth nerve, with objective sensory disturbances. The pupils were unequal, the left being wider than the right. Reactions were present. There were amblyopia and choked disks, and a slow nystagmus in extreme positions. There were hemiasynergia and hemiataxia of the left side. In falling, the patient favored the left, and progression was decidedly to that side. The nuclear reflexes were active; the knee-jerks exaggerated, the left more so than the

right. There was no ankle-clonus. The skin reflexes were present; no Babinski. The diagnosis of a neurofibroma of the left acoustic nerve was made, and operation was advised. From the known pathological character and relation of the surrounding structures of this variety of tumor in general, it was possible not only to localize the growth, but to state in general terms its situation in the pontocerebellar space outside of the brain substance, its possible size and consistence, and its enucleability. Its attachments to the surrounding structures consist only of the leptomeninges, blood vessels and adhesions, and when these are divided it would be possible to lift the growth out of its socket in the brain with ease. With these data at his disposal, Dr. Woolsey decided on entering the occipital bone on its posteroinferior surface, to the left of the median line and below the lateral sinus. The index-finger was inserted through the trephine opening and beneath the left cerebellar hemisphere, coming in contact immediately with the nodular surface of the growth, which was broken up by gentle manipulation and removed in fragments. There was a tendency for the cerebellar hemisphere to rise into the trephine opening, and this, with the digital manipulation caused some laceration of its substance, with oozing. Following the removal of the growth, the respirations of the patient became irregular and shallow, with occasional alarmingly long intervals. The pulse was rapid. The operation, which was done under ether, had required nearly two hours. At 5 P.M., three hours after the completion of the operation, the patient's temperature was 102° F.; pulse, 112; respirations, 26. The breathing had improved in character, and the patient seemed to be reacting. Slight clonic twitchings of the left side of the face were noticeable. Death occurred at 1 A.M., apparently of respiratory and cardiac failure, just twelve hours after the operation. Permission was obtained to remove the brain only. The outer surface of the dura was dotted here and there with little tufts and excrescences, which proved to be attached to the brain cortex and when torn away, they left minute depressions, with a punched-out border. Examination of the base showed that the tumor had been almost completely removed, only two small fragments remaining, together with a small blood-clot, scarcely larger than the little finger-nail. The inferior surface of the cerebellum was lacerated, but there was no external evidence of injury to the pons and medulla. The general ventricular cavity of the brain was dilated, showing that there had been a not inconsiderable internal hydrocephalus. Upon splitting the *worm* of the cerebellum, Dr. Hunt said he was surprised to find a firm, rounded projection from the left side of the floor of the fourth ventricle, corresponding to the site of the *tumor*. Microscopic sections through the brain proved this to be an extensive edema and hemorrhagic infiltration of the left peduncle of the pons, evidently arising from the region of the lacerated cerebellum and gradually encroaching on the vital centers of the medulla. This internal pons hemorrhage was probably the immediate cause of death.

Dr. George Woolsey said he was much interested in the class of tumors described in the cases reported by Drs. Fraenkel and Hunt, for they were so definitely localizable and could be so readily enucleated that they were very suitable for surgical treatment if they could be successfully exposed. He believed that this could be done. In the case he had operated on several months ago, which was referred to him at Bellevue Hospital by Dr. Hunt, he knew of no previous experience to serve as a guide in the operation. The tumor was approached from behind and the side by removing a large area of bone, comprising all that part of the occipital bone below the superior curved line and to the left of the median line. The opening left only a narrow bridge of bone between it and the foramen magnum, and extended forward into the mastoid until the bone became very thick. Passing the finger beneath the cerebellum, the tumor was felt and removed piecemeal. This necessitated introducing the finger a number of times, and there was some laceration of the lateral lobe of the cerebellum which did not seem of any moment. The tumor was larger than he had expected to find it. In another case he would try to pass a forceps along the finger, seize the tumor, enucleate it with the finger and remove it entire. The plan of operating in two stages, recommended by Horsley and employed by Dr. Elsberg he thought was most excellent where the exposure was prolonged and much blood was lost. He thought Dr. Elsberg's method of approach had much to commend it, although it was not so much nearer the site of the tumor than the opening he had made as might be inferred. It had the objection that the bone was very thick, so that too much time, and perhaps blood was lost in getting through it. In operations on brain tumors it was important not to take too much time in the exposure alone. This objection was obviated by operating in two stages. Dr. Woolsey said the entire operation in his case took no longer, if as long, as the exposure in Dr. Elsberg's case. After the operation, his patient seemed in good condition and appeared to suffer but little from shock, but symptoms of the latter appeared several hours later, and he failed to rally. On the whole, in another similar case, he would be inclined to operate in two stages and by the lateral approach suggested by Dr. Elsberg.

Dr. George E. Brewer said he had been interested in the subject of cerebral tumors for many years. He had twice explored the posterior fossa, in the first instance finding a sub-cortical cerebellar growth of tuberculous origin, which was successfully removed, the patient making an excellent operative recovery. He died some months later, however, from general tuberculosis. In the second case the patient succumbed after an extensive bone removal, undertaken simply to relieve pressure. A number of anatomical investigations carried on in the dissecting room of the College of Physicians and Surgeons led the speaker to advocate the plan of opening the skull by removing, practically, all of the bone below the superior curved line to within half an inch of the foramen magnum below, and from the median line to a point half-an-inch behind the mastoid. By opening the dura, the finger could be easily passed behind the lateral lobe and reach the situation of these tumors at a depth of less than an inch and one-half from the surface of the wound. Of course, adequate exposure to remove such a growth would necessitate the destruction of a portion of the lateral lobe: this, however, could be done without serious trouble to the patient, as had been demonstrated in his first case. It was Dr. Brewer's opinion that speed of operation was perhaps the most important factor necessary to success, as these patients almost invariably died if the operation was at all protracted. He was in favor of doing the operation, when practicable, in two stages. The first operation should consist of the removal of the bone only, which to a certain extent relieved the pressure, and at a subsequent period the dura should be incised and the tumor removed. He thought the primary operation should be done in from twenty to thirty minutes.

Dr. Hunt, in closing, referred to a previous communication, published in conjunction with Dr. Fraenkel, in which five cases of tumor of the pontocerebellar space were recorded. In that paper, especial stress was laid on the certainty of localization and the enucleability of this group of tumors, and their surgical importance.

In both of the cases under discussion, in which operation was attempted, the diagnosis of an acoustic neuroma was made, and the operative procedure was modified to meet the known anatomical peculiarities of this type of tumor. In Case I the patient succumbed thirty-six hours after the performance of the first stage of the operation, apparently from shock, although a renal complication could not be excluded. In Case II death was due to laceration of the cerebellum, with resulting effusion of blood into the tissues of the medulla and pons. Both of the operations were prolonged and tedious, and considerable trauma was inflicted in removing the thick occipital bone, and enlarging the trephine openings. It seemed of paramount importance, in exposing tumors in this locality, that the operation be done expeditiously and with great gentleness, as any concussion must be especially effective in this region. The division of the operative procedure into two stages was also to be recommended.

JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Stated Meeting, held March 21, 1904.

Two Cases of Gout in Negroes.—Dr. Futcher reported these cases. The first was a man of thirty-one years, who was admitted to the hospital complaining of dyspnea and rheumatism. He had had no infectious diseases except measles. There was a marked alcoholic history extending over many years. About six months previously he had had an attack of "rheumatism" in the left big toe joint from which he recovered. On admission the same joint was swollen, red and sensitive. The heart was enlarged and there were physical signs of mitral stenosis and insufficiency and of aortic insufficiency. The acute gout subsided; but the patient was again admitted some weeks later with signs of broken compensation (cyanosis and edema). The symptoms cleared up but about two months subsequently the patient was admitted for the third time, complaining of dyspnea and edema. He died, in a semicomatose condition, within twenty-four hours. Autopsy showed a mitral insufficiency and stenosis, aortic insufficiency and a sodium-biurate deposit in the synovial membrane of the big toe-joint. Dr. Futcher thought that there was probably no relation between the gout and the heart condition. The second patient, a man of twenty-four years, was admitted with anemia, puffiness of the eyelids, and marked headaches. The urine contained albumin and casts. There was swelling of the left big toe-joint with pain and tenderness, but this disappeared in two weeks. Headaches became worse, coma appeared and death followed. Autopsy showed a chronic interstitial nephritis of the "small white" variety. The interest of these cases lay in the rarity of the disease in negroes, no other case having occurred at the Johns Hopkins Hospital.

Relation of Uric Acid to Gout.—Dr. Schmoll spoke on this subject. Two theories have been advanced: one based on retention due to the failure of the kidneys to excrete (Garrod) and the other on an actual increase in formation of uric acid. Neither theory, however, is tenable. Gout may be due to precipitation of uric acid from the blood (for it exists there though not detectable on account of its combination with thymic acid), or to an actual synthesis.

Piezometer.—Dr. Kelly showed a new instrument recently devised for him for accurately recording the findings of palpation, substituting an objective method for the subjective touch sense. It is called a Piezometer and registers differences of hardness and softness, of rigidity and of pressure needed to cause pain.

Myomectomy in its Relation to Pregnancy.—Dr. Kelly also read this paper. Formerly in all cases of myoma panhysterectomy or supravaginal hysteromyomectomy was done; but with improvement in technic myomectomy has been more commonly practised. Two hundred and thirty-one such operations have been done at the Johns Hopkins with six deaths. The following are the reasons for the procedure: (1) It removes the disease without the uterus. (2) It avoids menstrual disturbance and an artificial menopause. (3) It allows conception. (4) It does not cause the mental distress which accompanies removal of the uterus. Of 140 subjects reviewed by Dr. Kelly from his own work four have conceived. The patients presented various types and sizes of myoma; two of them have borne full-term children, one miscarried and one is now pregnant. Schauta, Wurder and Olshausen have reported cases of conception following myomectomy, but there is no series which shows quite this proportion of successes.

Dr. Noble said that he was a myomectomist but not an extreme one, believing in the operation under a number of limitations. The woman should be under thirty-five years, the tumors small in size and number, the patient's full consent gained for the more dangerous procedure, and a strong desire for children present. He knew of at least two children born of women on whom he had performed myomectomy.

Observations on the Subclavian Artery in Man.—Dr. Bean reported these, which were made in the dissecting rooms of the Johns Hopkins Anatomical Laboratory. Two hundred and nineteen subjects were studied and five general types of the artery observed. Four anomalies were found: (1) A lateral thoracic artery in 5 of 28 cases. This may have clinical importance in broken rib, tapping of the pleura or resection of a rib. (2) Thyroida in an artery supplying the lower half of the thyroid gland, of clinical importance in tracheotomy and surgery of the thyroid. (3) An anomalous right subclavian artery. (4) An anomalous origin for the arteries from the first and second parts of the subclavian.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

Section on Clinical Medicine and Surgery.

Stated Meeting, held March 18, 1904.

Pneumonia.—Dr. Pleasants read a paper on the statistics of this disease and exhibited a chart showing the mortality curve for tuberculosis and pneumonia during the past fifty years. The former has steadily fallen and the latter steadily risen. The banner years for pneumonia deaths in Baltimore being 1900 and 1903-'04. The mortality from pneumonia this year though large has been exaggerated by the newspapers. Exposure at the time of the fire, and unusual climatic conditions have been suggested as the causes, but there is little proof for either. The large negro population of Baltimore of course accounts for a great number of the cases here. The total death rate in that race being twice that of the white. The morbidity of the disease is hard to estimate, and whether the mortality increase of the last fifty years is really due to an increased number of cases or an increase in the fatality it is impossible to say. The following factors must be considered in explaining the increased mortality of the disease: (1) Increase in the density of the population; (2) general prolongation of life, and reduction of intestinal diseases among children; (3) climatic fluctuation; (4) increase of immigration; (5) the negro element; (6) more accurate diagnosis, with better autopsies and death reports; (7) decrease

of death rate from tuberculosis; (8) the presence of influenza, with which pneumonia is evidently closely connected; (9) a theoretical increase in the virulence of the pneumococcus.

Bacteriological Knowledge Concerning Pneumonia.—Dr. Welch dilated on this subject. In spite of the complete studies of the disease, this knowledge has had practically no influence on the clinical attitude. The organism first discovered by Sternberg in 1880, confused with bacillus by Friedländer in 1883, and clearly described in 1886 by Fränkel and Weichselbaum, is found in all cases of true lobar pneumonia. It is a delicate organism, but by proper methods can always be demonstrated. It is characterized by short viability in cultures and in the body, and by its causing a local inflammation, but it also sets free a toxin (causing the pneumonic fever of Flint). Following the discovery of the toxin of diphtheria and tetanus attempts were made to produce a similar substance for pneumonia. This, however, is bacteriologically an impossibility, and the evidence that the pneumococcus produces a toxin is entirely clinical. The organism is thought by some to be only a variety of the streptococcus. It is harbored normally by 20 per cent. of all people, and the accessory causes of pneumonia are therefore almost the efficient causes. In fact, there is no disease in which such emphasis must be laid on the so-called accessory causes. It is hard to decide to just what extent the disease is contagious, but there is no bacteriological basis for making it a reportable disease. It is unknown in Arctic expeditions which would seem to point against exposure as one of its causes. It may cause septicemia. The immunity which it produces is in human beings only transitory. A definite artificial immunity, though of not a high degree, is easily produced, and the serum from animals so immunized undoubtedly protects against the disease. But all antibacterial (as distinguished from antitoxic) sera are uncertain, and this is exceedingly true of the pneumonia serum, the clinical value of which is of very great doubt.

Hospital Experience.—Dr. Osler discussed pneumonia as he has seen it in his hospital experience. One of the striking features of the disease is its sameness. In the past twenty-six years he had studied the disease in three large hospitals in various parts of North America, but its clinical features were always uniform. This is particularly true of the mortality, which Dickerson showed several years ago to remain (when large numbers of cases are considered) absolutely uniform. In the Johns Hopkins Hospital the average mortality has been 26 per cent., and the same figures hold for the Massachusetts General Hospital, for the Montreal General, and for Blockley. In private practice of course a smaller proportion of deaths is seen, but terminal pneumonias are often overlooked here, ether pneumonias are very rarely seen, and other causes operate to reduce the mortality. There is no disease the familiarity with which can be more valuable to the student than pneumonia, and at the Johns Hopkins the students are thoroughly drilled by constant clinical contact with this disease and with typhoid.

Therapeutic Side of Pneumonia.—Dr. Atkinson discussed this side of the question. Pneumonia is largely a local inflammation and it ends by crisis. The body is therefore limiting the disease anatomically and preparing in the end to overcome it which, if undisturbed, it can do. The indications then are plainly (1) to aid the natural tendency to recovery, (2) not to interfere with it (as for instance by the administration of nauseating expectorants). Some of the cases will die and others will get well, no matter what we do, but between these two classes lies the field for therapeutic interference. There is of course no specific for this disease. Bloodletting, veratrum viride and sera, whatever their value, are not specific. Bloodletting is too much neglected, and is particularly of value when the right heart is overdistended. The therapeutic rule should be to go slow with treatment, to watch the case carefully and to try to help nature rather than to make any definite attack on the disease itself. Rest, relief of pain and sleep should be obtained by morphine. Small doses of strychnine and alcohol provide the necessary stimulants when the heart lags. The ice-bag and cold sponges should of course be used. Oxygen is of value, if administered in time. Digitalin and nitroglycerin should be avoided, but saline infusions are of value in increasing diuresis.

BOOK REVIEWS.

Modern Microscopy. By M. I. Cross and Martin J. Cole. Third edition. W. T. Keener & Co., Chicago.

There is always an eager band of students to whom the mysteries of the microscope offer a most enticing field. Guides to the proper use of this book of nature are not many and we welcome all that promise to be of use to the searchers after the hidden secrets of organic life.

This is a handy and useful volume and can be thoroughly recommended to the student. How to use the microscope, how to mount, stain and present specimens, are all well told. We cordially grant it a place of honor on our laboratory table.

A Text-book of Legal Medicine and Toxicology. Edited by Frederick Peterson, M.D., Clinical Professor of Psychiatry, Columbia University, and Walter S. Haines, M.D., Professor of Chemistry, Pharmacy, and Toxicology in Rush Medical College. Vol. 2. W. B. Saunders & Company, Philadelphia, New York and London.

For a number of years this work has been anxiously awaited, as there has been a distinct need for a more authoritative and modern work on the subject than is possessed for the English reading public.

The time spent has not been wasted, for in these two volumes, taken in their entirety, we possess a thorough and modern encyclopedic handling of the subject-matters of legal medicine and toxicology.

We would like to have space to comment on some of the excellent features of this second volume, but beyond the expression of commendation for the entire volume we cannot stop to particularize.

Medical Jurisprudence. By Edwin Welles Dwight, M.D., Instructor in Legal Medicine, Harvard University. Lea Brothers & Co., New York and Philadelphia.

We do not know of a similar quiz compend on this subject that adapts itself so thoroughly to the needs of the average student as this.

As a rule it takes many years in practice before one exhausts, as it were, the simple questions that are here treated, and each one in its turn comes up in an unexpected manner and ofttimes the ingenuity of the physician is severely taxed in adapting himself to the unfamiliar medicolegal relationships.

Death, presumption of, survivorship, identification of the dead, causes of sudden death, medicolegal aspects of pregnancy, abortion and divorce, infanticide, legitimacy, insanity, life insurance, etc., are among the topics discussed. For a handy and ready work of reference this small epitome is a much appreciated help. We commend it cordially to beginners.

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ORIGINAL ARTICLES.

THE SYMPTOMATOLOGY, DIFFERENTIAL DIAGNOSIS AND COURSE OF BRONCHOPNEUMONIA IN CHILDREN.*

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OF NEW YORK;

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IN presenting these observations on the most frequent disease of infancy and early childhood, I do so, not in the hope of adding anything that is novel to the knowledge of the subject, but principally in order to set boundaries, as well-defined as may be, about the discussion that is to follow. For which reason I may be excused for dwelling somewhat at length on a working definition, or rather description of bronchopneumonia.

Three varieties of pneumonia, exclusive of tuberculosis, are commonly met with at autopsies on children, representing, as it seems to me, three powers of resistance to the invasion of the pulmonary structure by pathogenic organisms. First, hypostatic pneumonia, the pneumonia of the least resistant of the marantic, those wasted by long-continued disease, the pneumonia of the weakening heart. Second, bronchopneumonia, the pneumonia of the more resistant child, who is, however, still physically handicapped by reason of age, surroundings, bad air, improper food and previous illness. Third, lobar pneumonia, the pneumonia of the most resistant, of the child usually over three years of age, in previously robust health, non-catarrhal, non-rachitic, infrequently a tenement-house dweller, rarely an inhabitant of an institution, the primary benign pneumonia of so-called good private practice.

With the first variety we have nothing to do; it represents but the final stage in a feeble struggle for life, long destined to be futile. It is rarely of importance clinically, and infrequently diagnosticated during life. The third variety, lobar pneumonia, received ample attention at our last session, somewhat at the expense of the more important disease.

Bronchopneumonia is essentially a disease of the poor and unfortunate. It must be studied in great part in dispensaries, tenement houses and infant asylums. In the latter, especially when coming in the wake of epidemics of the various infectious diseases, it constitutes a veritable scourge.

While it is undoubtedly true that the child of the institution and tenement is somewhat more frequently exposed to the action of the micro-organisms which are the cause of this disease, yet when we consider how omnipresent are these same organisms at certain seasons of the year, this fact alone cannot be held accountable for the immense preponderance of cases of bronchopneumonia occurring amid these surroundings.

It is not in the germ, but the character of the tissues upon which it is implanted, that we must seek an explanation of this fact. What are the factors which go to render a child susceptible to bronchopneumonia? Briefly they are, insufficient fresh air and sunlight, improper food, or food not adapted to individual needs; unsuitable clothing; health impaired by previous illness, and lack of attention to pathological conditions of the upper air passages. These factors, wholly or in part, are present even in the best conducted institutions, and in all tenement houses. The results are rachitis, anemia, chronic nasopharyngeal catarrh, and chronic gastro-intestinal disturbances, which collectively serve to distinguish the ready victim of bronchopneumonia.

For the purposes of this discussion I have analyzed somewhat carefully 167 cases of so-called primary bronchopneumonia, believing that the clinical picture in primary cases is more characteristic than in those which are classed as secondary. They occurred at the New York Foundling Hospital during the past three years, and in no instance were complications of one of the exanthemata, diphtheria or whooping-cough. What proportion was due to influenza it is not possible to say, nor is it always easy to determine whether the severe enteric symptoms of some of the cases were an indirect cause or result of the pulmonary lesion. Many developed outside of the institution to which they were brought by their foster mothers, generally from tenements, for hospital treatment. Of these the histories are necessarily defective. The number analyzed represents but a fraction of the cases of bronchopneumonia actually occurring at this institution during this time, the great majority being classed as complications of the infectious exanthemata, diphtheria or whooping-cough, or only appearing upon the autopsy records, the pulmonary lesions not having been noted during life, or deemed of insufficient clinical importance, in the presence of the overshadowing primary disease, to merit special mention in the clinical records.

It must not be forgotten that it is exceptional at this institution to find at autopsy, lungs which are free from pneumonic lesions, for which reason it would obviously be absurd to class all cases in which these are found as those of bronchopneumonia.

While the number of cases analyzed is a somewhat small one from which to draw general con-

* Read before the Pediatric Section of the New York Academy of Medicine, Jan. 14, 1904.

clusions, as the deductions correspond very closely to those drawn from a much greater number, they are of value as showing the conditions existing in institutions at present, and during the immediate past.

Bronchopneumonia is essentially a secondary or complicating disease. One-third of the cases are generally set down as primary, a proportion which would seem a good deal too large, in so far, at least, as it relates to institutions. In the latter, the milder catarrhal affections of the upper air passages are generally overlooked; acute coryza, tracheitis, and even bronchitis of the larger tubes and mild influenza does not, in my experience, call for especial attention from a resident physician or nurse, provided the patient is not particularly ill, the consequence is that when the child is first examined, the signs of pneumonia are often well developed, and if they have not followed one of the severe, acute, infectious diseases, the case is classed as primary. If more careful observations were made upon institution children, from the time they developed a so-called "cold" with fever, the number of cases of bronchopneumonia, which are now classed as primary, would be materially reduced.

Occurrence.—Bronchopneumonia, unlike lobar pneumonia, occurs at all seasons of the year; thus in the list of cases referred to, somewhat less than one-third occurred in both winter and spring, about one-fourth in the fall, and about one-eighth in the summer quarter, or two-thirds of the cases between December and May. Males are somewhat more frequently attacked than females, 96 to 71, about five to four. As there is a slight preponderance of males at the Foundling Hospital, the fact is not noteworthy, although this is the proportion usually given, and is difficult to account for.

Of 147 cases in which the age was stated, over 58 per cent. occurred in children under one year of age; 20 per cent. from the first to the second year; 13 per cent. from the second to the third year; and 9 per cent. in those over three and under five. In other words, 70 per cent. of the cases were in children under two years of age.

Causes.—The indirect causes have been sufficiently indicated. The direct causes are exposure to cold, extension of an inflammation from the upper air passages downward, the acute infectious diseases, diarrheal diseases, or any factor which still further diminishes the feeble resisting power of the child to pulmonary organisms.

Symptoms.—There is no disease more irregular in its course and uncertain in its outcome than bronchopneumonia, on account of the variety of bacteria which either singly, but much more often in combination, are responsible for the pulmonary lesion and also to the varying amount of lung involved, and the greater or less resistance shown by the patient to the action of the toxins.

There is often a history of previous good health, or of acute catarrhal trouble of the upper air passages, moderate or severe bronchitis, convalescence from an acute infectious disease, or exposure to cold. Whether the pneumonia develops during the course of an acute infectious disease, in convalescence from it, or while the child is in its usual state of health, the onset is invariably sudden, and is ushered in in one of several ways; the child becomes apathetic, ceases to play, refuses to nurse properly, or is irritable and restless. Vomiting occurred six times in 56 cases of which I could obtain the history of onset; convulsions in five; chills were noted in two cases; there is generally more or less cough, and the bowel movements are frequently loose and green in color; the skin is hot, the respirations are increased in frequency, the pulse is rapid; the child when disturbed does not cry in a normal way; the cry is curtailed and ends abruptly, as though the expiratory effort caused pain or discomfort; the rhythm of respiration is disturbed; the pause which in health occurs after expiration is lost, and instead occurs after inspiration; the child inspires, holds its breath, and lets it out with a characteristic grunt, and immediately inspires again, possibly another indication that expiratory effort causes discomfort or pain.

Physical Examination.—The temperature will be found elevated four or five degrees or more, the respirations forty or more to the minute, the pulse 120 or over, the ratio of the respiration to the pulse, which in health is one to four, invariably approaches one to three, or less, or even one to two; in the more severe cases there is marked retraction at the epigastrium and about the clavicles, the alæ nasi expand and there may be more or less cyanosis seen in the lips and finger tips; the face is sometimes flushed, often pale.

On palpation the coarse râles of bronchitis are transmitted to the touch, or the cry may show unequal intensity of transmission on the two sides, especially at the bases or apices.

Percussion, which should be performed very lightly, the stroke sharp and quick, is of minor diagnostic importance in the early stages of the disease. Dulness may be elicited when there is marked congestion at the bases, or when the areas of consolidation involve a greater part of a lobe.

Auscultation is by far the most important factor in arriving at a diagnosis in the early stages. With the presence of a general bronchitis, coarse, moist râles are heard over a greater part of the chest, or only between the scapulæ and below the clavicles. Subcrepitant and fine râles, emanating from the finer bronchi and air vesicles, should be diligently sought for, as taken in connection with the symptoms described, they are conclusive proof of involvement of the terminal bronchi or air vesicles, or of pulmonary congestion. They may be very generally distributed, but are more often heard only over small areas, at one or both bases near the spine, in the axillæ, or at the apices. They may be heard constantly, or only when the child is induced to take a deep inspiration, as after crying, or an attack of coughing. Early in the disease there is usually no change in the character of the respiratory sounds. Over areas of consolidation of considerable extent

there may be exaggerated, diminished, or bronchovesicular breathing, the latter distant or intense, depending upon the proximity of the area to the chest wall, the condition of the lung overlying it, whether or not emphysematous, and the presence or absence of pleuritic involvement.

Finally, it must not be forgotten that considerable areas of consolidation may be found at autopsy, of which, during life, there was no evidence other than the presence of a few râles, and even these may have been absent. The physical signs may all be delayed for several days, or may be entirely absent during the whole course of the illness. Again, it not infrequently happens that the signs of consolidation are first recognized just before defervescence takes place.

Course of the Disease.—In the typical cases the fever rises rapidly to 104° F. or over, and continues with morning remissions of two or three degrees for a variable number of days. In my list of cases the average duration in those that recovered was thirteen to fourteen days; in five cases four days or less; it may continue for one or two months with the development of chronic changes in the lungs; in children of low vitality the disease may run its course practically without fever; and again the remissions of temperature may be very marked. The latter is especially true of cases in which the influence of the streptococcus predominates; in cases which recover the general trend of the temperature is downward after two or three days; in fatal cases the temperature of each day is a little higher than that of the preceding, the highest point being reached just before death, or it may rise suddenly to 106° or 108° F., and death take place in twelve to twenty-four hours; the fever falls by a more or less gradual lysis, exceptionally by crisis, which occurred but nine times in 167 cases.

The pulse is at first rapid and of good force; later in the disease rapid and feeble; as already stated, it constantly bears a ratio to the respiration of three to one, or less. The character of the respirations has been described; they vary in frequency from 40 to 100 or more a minute; they may occasionally be suspended for a considerable time, or be of the Cheyne-Stokes variety.

Cough may be entirely absent, it is often persistent and nagging; generally dry in character, or a large amount of mucus may be raised and swallowed. Suppression of the cough is seen in fatal cases.

Vomiting, after the disease has once begun is not frequently seen; on the other hand, the bowels as a rule show evidence of disturbed digestion; the movements are frequent, green in color, and contain more or less mucus. Catarrhal conditions of the enteric tract are common, especially in the cases occurring in the summer months. Gaseous distention of the intestines is often seen and may be so severe as to seriously interfere with the already embarrassed respiration.

Nervous System.—Stiffness of the neck and shoulders is marked in many epidemics; there may be intermittent spasm in groups of muscles. Delirium occurs in older children, convulsions after the first onset, usually only in the rachitic and in fatal cases. The tâche cérébrale and Kernig's sign are occasionally seen.

It is unnecessary to dwell at length on the symptoms of those cases which arise in the course of the acute infectious diseases. But for the fact that they are often obscured by the symptoms of the primary disease and of their usually greater severity, they do not differ essentially from those just described.

Diagnosis.—When a child under three years of age becomes suddenly and gravely ill, bronchopneumonia should always be thought of, even if the symptoms referable to other organs, as the brain and intestines, serve to draw the attention from the lungs; or if in the course of convalescence from an acute infectious disease, the temperature is suddenly elevated, the pulse and respiration increased in frequency, bronchopneumonia is by far the most probable cause.

The diagnosis is based on the acute onset in primary cases, the aggravation of all symptoms in secondary cases; in primary cases on the changed demeanor of the child and evidence of toxemia, fever continued over thirty-six hours with increase of respiration and pulse, and most important of all, the disturbance of the respiration, pulse ratio and the presence of fine râles, especially if localized, and occasionally a change in the respiratory sounds. Cough is not an essential.

Differential Diagnosis.—Fever in a young child occurs alone in so many conditions that it is of little diagnostic value; fever with respiration over 40 to the minute, and with a diminished ratio between it and the pulse rate occurs in other conditions than bronchopneumonia, but is rarely long continued except in the latter. It is seen in digestive disturbances with intestinal distention, at the onset of acute infectious diseases, especially when these are accompanied by involvement of the air passages; thus in measles, during the height of the fever, disturbance of the respiration pulse ratio is the rule. Scarlet fever, on the other hand, rarely gives it; acute bronchitis, meningitis, nasal obstruction due to acute nasopharyngeal infection, laryngeal stenosis, and, finally, it is probable certain reflexes, as those due to dentition, middle-ear and mastoid diseases, may be a cause of this common phenomenon.

Bronchopneumonia may be distinguished from bronchitis of the large and medium bronchi by the lower temperature and shorter course of the latter, usually not over four or five days, absence of toxemia, and of the characteristic râles of bronchopneumonia.

From so-called capillary bronchitis it is not possible nor essential to distinguish bronchopneumonia; the cases of the former, in which I have had an opportunity to make a microscopic examination of the lung, invariably showed more or less involvement of the air vesicles. There seems to be no good reason for making a clinical

distinction between a disseminated bronchopneumonia and a capillary bronchitis.

Fluid in the chest in infants and young children, usually occurs as a complication or sequela of pneumonia, either of the bronchial or lobar type. It is more often turbid in character or a thick, creamy pus than clear serum. The cases of bronchopneumonia in which it is found are usually those in which there is involvement of the greater part of one lower lobe. There may be a bulging of the chest wall on the affected side and more or less displacement of the heart to the opposite side, percussion will give dulness or flatness over one of the bases, extending well up in the axillary line; on auscultation there is diminished or absence of breathing on the affected side and with an underlying bronchopneumonia or compressed long distal bronchial breathing. Pleuritic râles are frequently heard. Finally, in cases of doubt, exploratory puncture should be made with a needle of large caliber.

Bronchopneumonia is sometimes mistaken for laryngeal stenosis by those unfamiliar with the symptoms of the latter, and I am informed by an antitoxin inspector of the Board of Health that in his experience, cases of the former are occasionally intubated by mistake. The comparatively slow, painful and perfectly characteristic respiration of laryngeal stenosis, marked epigastric and sternal recession, the expression of intense anxiety or even terror on the face of the child, all constitute a picture which is so typical that it would seem that only lack of experience could justify its being mistaken for any other condition.

When bronchopneumonia occurs in the course of a laryngeal diphtheria, its recognition by physical examination is sometimes rendered difficult by the transmission of the abnormal respiratory sounds from larynx and trachea, so that the diagnosis must be made largely on the symptoms (rise in fever, respiration and pulse). When pneumonia is present in such cases, the question sometimes arises if the appearance of a marked cyanosis, dyspnea and air hunger is due more to the complicating pneumonia or laryngeal condition; in desperate cases, when the question cannot be definitely settled, it is perfectly justifiable to exclude the laryngeal element by the performance of intubation.

Meningitis of any variety should not be mistaken for pneumonia; on the other hand, bronchopneumonia, with exaggerated nervous phenomena, may at its onset lead to an erroneous diagnosis of meningitis. Both diseases may be ushered in by convulsions, which may recur repeatedly during the course of the disease. In both there may be spasm of groups of muscles together with ocular symptoms; in both Kernig's sign and tâche cérébrale may be found; rigidity of the neck is not uncommon in pneumonia, while the apathetic facial expression of the latter bears somewhat of a resemblance to the mask-like face of meningitis. Finally Cheyne-Stokes respiration may occur in both. The respiration of meningitis is slow, characteristic of the disease and usually quite unlike that of pneumonia. The pulse is slow or not markedly quickened and is irregular; the rigidity of the neck is much more marked; opisthotonos is frequently present; muscular spasms are much more lasting; ocular symptoms occur with great regularity together with paralyses, coma and delirium. Finally, in cases which cannot be otherwise differentiated, lumbar puncture will generally accomplish the result.

Malaria, especially when, as is frequently the case, it is accompanied by bronchitis, may be mistaken for bronchopneumonia; enlargement of the spleen does not serve to render a positive differential diagnosis and blood examination must be relied on in doubtful cases.

I have only to add that in obscure, acute, febrile cases occurring in young children, the possibility of bronchopneumonia must never be overlooked, and the practitioner who has the various phases of this protean disease constantly before his mind can alone hope to avoid pitfalls laid for the unwary; even though, in accomplishing this end he becomes a species of devil's advocate, coming to regard every suspicious case as guilty until proven innocent.

124 East Sixtieth Street.

THE PATHOLOGY OF LOBAR AND BRONCHOPNEUMONIA IN INFANTS AND CHILDREN.*

BY DAVID BOVAIRD, JR., M.D.,
OF NEW YORK.

While there may be room for differences of opinion as to the relative frequency of lobar and bronchopneumonia among infants and children in clinical experience, there is no doubt as to the prevalence of the latter affection in the autopsy room. In the last 500 autopsies at the Foundling Hospital we find bronchopneumonia recorded 191 times, approximately 40 per cent of the examinations, while lobar pneumonia was found in but 25 cases, 2 per cent. of the examinations. These figures throw no light on the question of the relative frequency of the two affections during life. In the early years of life lobar pneumonia is regularly a primary disease, is rarely fatal and is therefore infrequent in the autopsy room. Bronchopneumonia, on the other hand, is rarely primary, but is the dreaded complication of the infectious diseases so common among children, especially measles, diphtheria, whooping cough and the gastro-intestinal affections. Attacking patients already weakened it is correspondingly more fatal and more frequently seen in the post-mortem examinations.

The pathology of lobar pneumonia in infants and children presents no striking differences from the appearances familiar in later life. So far as my personal experience is concerned I cannot recall ever having seen in the infant or child the primary state of lobar pneumonia, that is the stage

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of simple congestion. We regularly find it as a red or gray hepatization of one or more lobes of one or both lungs. Of the 25 fatal cases already mentioned 12 involved the right lung, 6 the left, and in 7 instances both lungs were affected. In the stage of hepatization the affected lobe or lobes is enlarged, firm, the pleural surface injected and hazy or rough from a coating of fibrin, and on section the lung is airless, granular, deep red or grayish red. While there may be shadings in the color of the exposed surface, one part being redder than another, the section is usually quite uniform, a characteristic which taken in connection with the granular appearance is fairly distinctive of the lobar type of inflammation.

While, as a rule, a whole lobe or several lobes are involved in the process, it is more common in children than adults to see a partial consolidation of a lobe, or a distinctly lobular type of pneumonia. Apart from the question of the area involved the appearances are the same.

The amount of pleurisy seen in these cases varies greatly. Most frequently there is only enough fibrinous exudation to render the pleura hazy or slightly granular, but it is not uncommon to see a heavy deposit, pale greenish-white or yellow in color, plastered like a mortar over the pleura to the depth of one-third to one-half inch. There are all grades between these two extremes. With the pleurisy there will be more or less serum, sero-pus, or pus in the pleural space. In some cases of lobar pneumonia the infiltration of the lung is so intense and the degeneration of the cells so advanced as to give a very granular appearance and a pale yellowish color to the cut surface very suggestive of the caseous pneumonia more often seen in adults. One instance of this kind I recall in which two very competent pathologists regarded the process as surely tuberculous, but smears from the surface showed an abundance of pneumococci and no tubercle bacilli.

As a very great rarity true caseous pneumonia may occur in infancy. The one example of this process which I have seen closely resembled the ordinary lobar pneumonia, but the affected lung was more dense, the cut surface was more granular and more uniformly yellowish-white than in the common consolidation. Smears from the surface showed numbers of tubercle bacilli. From time to time small abscesses may be seen in the consolidation of lobar pneumonia, and more or less extensive gangrene of the lung may occur.

The microscopical picture in lobar pneumonia is fairly familiar. The pleural surface shows the fibrinous exudate, the air spaces and the smaller bronchi are filled with an exudate of red blood cells, leucocytes, epithelium, and fibrin, together with bacteria. In the early stages the congestion is marked and there will be abundance of blood in the exudation. Later the blood disappears and the other elements of the exudate increase. There is usually less epithelial desquamation but more fibrin, and the fibrin is more uniformly distributed through the section. The general connective tissue of the lung is swollen and may show some infiltration with new cells. If abscesses are formed or gangrene develops, the corresponding appearances will be seen in the section.

Apart from the pleurisy regularly met with in lobar pneumonia the most important associated lesions are the inflammations of the other serous membrane, the pericardium, the meninges, and the peritoneum. In these tissues we may see a serofibrinous inflammation, and especially in the pericardium or the meninges the deposit of fibrin may be very heavy. Such complicating processes are regularly due to the activities of the pneumococcus and are the evidence of a general infection with that organism.

With the appearance of bronchopneumonia in infancy and childhood we are much more familiar. As already stated the complicating pneumonia of the infectious diseases is regularly of the bronchial type, and bronchopneumonia is met with in about 40 per cent. of all the autopsies at the Foundling Hospital.

In general three distinct types of bronchopneumonia are recognized, types which represent stages in the development of the process, just as the congestion, red hepatization and gray hepatization represent the stages in the evolution of lobar pneumonia. In all three stages the process is regularly bilateral, and for the most part symmetrical. The posterior parts of the lungs usually show more extensive consolidation than the anterior, although it is not at all infrequent to find the anterior extremities of the upper lobes firmly consolidated. In the first of these stages or types, the beginning bronchopneumonia or the capillary bronchitis of former years, the surface of the lung may appear normal or there may be a few small areas of collapse, the affected portions being deep blue, depressed, and airless. On section the greater portion of the lung appears normal, but about the smaller bronchi there are throughout both lungs rings of deep red congestion, and on opening the bronchi the appearances of a bronchitis are found. In such cases it may be quite impossible to appreciate by sight or touch the presence of any consolidation, but on microscopical examination we find the smaller bronchi full of an exudation, consisting of epithelium from its walls and leucocytes, together with bacteria. The wall of the bronchus appears swollen, is infiltrated with leucocytes, which may be observed between the cells still affixed to the wall, in the submucosa and beneath it. The air-cells immediately about the bronchus will be found filled with cells exfoliated from their walls, with leucocytes and a very little fibrin. In some cases we see many red blood cells, but this is quite unusual. At the periphery of the zone of inflammation will be seen a ring of air-cells in which the exudation is very largely fibrin. In some instances the contents of the bronchi consist only of a fine glandular material and fragments of nuclei, and exudate having undergone necrosis.

The second stage or type shows areas of consolidation disseminated throughout the lung. The areas are of varying size, large enough to be ap-

preciated by the sense of touch as consolidations, and yet with lung tissue between them which is normal or congested or emphysematous. On section the surface is deep red, rather smooth and shiny, lacking the granular appearance so characteristic of the lobar consolidation. The smaller bronchi in these cases usually project slightly from the cut surface and, upon pressure, show plugs of muco-pus. The microscopical picture is essentially that already described, but involving more extensive areas.

The third stage is that known as pseudolobar bronchopneumonia, in which the previously disseminated areas of consolidation merge one into the other and a whole lobe becomes solid. The affected portions are airless, the cut surface may be slightly dull, but has not the granular look seen in the lobar pneumonia, and is almost always mottled or dappled dark red and gray, the lighter colored areas being the earlier and more intense peribronchial consolidation. Owing to the branching of the bronchi these lighter areas usually show something of a stellate arrangement, the figures formed suggesting the trefoil of the clover leaf. It is not at all uncommon to find in these extensive bronchopneumonias a breaking down of the smaller bronchi with the formation of small abscesses, and gangrene may occur, particularly in the bronchopneumonias associated with such processes as cancrum oris and diphtheria.

When a bronchopneumonia involves a whole lobe, we usually find that the posterior parts are much deeper in color than the anterior, owing to the attendant congestion; in fact, in the extensive consolidations seen in fatal cases of diphtheria and similar affections, we are often struck by the dirty-white color of the anterior portions of the upper lobes, although they are consolidated. Even in these paler areas the contrast between the peribronchial infiltration and the more peripheral consolidation can be appreciated. In most of the extensive bronchopneumonias there is considerable emphysema of the interstitial tissue in the anterior parts of the lungs.

With a bronchopneumonia involving the greater part of a lobe there is usually some pleurisy. As in the case of a lobar pneumonia there may be only a slight deposit of fibrin on the pleural surface or the exudate may be quite heavy. The very thick exudates are, however, more common in the lobar pneumonias. The writer has been impressed by the frequency with which empyema is associated with empyema. In a study of the pathology of empyema in infants the writer found that among 101 cases there was more or less consolidation of the lung in 56. Of these 56 cases 10 showed lobar pneumonia, 27 bronchopneumonia, 15 were indefinite, and 4 showed tuberculosis. This frequency of bronchopneumonia in association with empyema is, I believe, rather in contrast with the findings in the later years of life.

The microscopical picture in these extensive bronchopneumonias is only a more extensive development of the condition found in the early stages. The essential features are the infiltration of the walls of the smaller bronchi and the air-cells immediately about them, the abundant desquamation from the walls of the alveoli, the usually scanty appearance of red cells in the air-spaces and the smaller amount of fibrin in the exudate. With the development of abscesses or gangrene the corresponding appearances will be found in the section.

The bacteriology of lobar pneumonia is now well established. While other organisms may, under favorable conditions, cause such a pneumonia, in the great majority of cases (95 per cent Aufrecht) the *Micrococcus lanceolatus* or the pneumococcus is the causative agent. The pneumococcus may be found alone or associated with other organisms, the Friedländer bacillus, streptococci, staphylococci, and various others. The relation of the pneumococcus to lobar pneumonia has been strengthened by the demonstration of its presence in the blood in these cases. The workers of recent years have reported steadily increasing percentages of such blood infections. The Klemperer brothers never found the pneumococcus in the blood. Aufrecht says that they are found in the blood in from 10 per cent to 50 per cent of the cases. Silvestrini and Sertoli found them in 15 out of 16 cases. Prochaska, in 1901, reported 50 examinations with positive results in all. Rosenow, who gives a careful review of the whole subject, reports this year 77 positive results in 83 cases. All of which serves to more firmly establish the relation of the pneumococcus to the lobar pneumonia and to support the view that the affection is to be regarded as a general infection with a local lesion.

The bacteriology of bronchopneumonia is more complicated, but here again the pneumococcus is the prevalent organism, occurring in 50 per cent or more of the cases. In other instances streptococci, staphylococci, the Friedländer bacillus, the diphtheria bacillus (Frosch, Babes, Baginsky), the typhoid bacillus (Polynieri) may be found. The majority of the cases are mixed infections. In the primary cases the pneumococcus is more likely to be found. In the secondary cases the streptococci, staphylococci, the Friedländer bacillus, or the organism of the primary disease (diphtheria, typhoid, etc). Whether or not there is a blood infection in the primary cases of bronchopneumonia has not yet, to my knowledge, been proven. That such will be found to be the case seems highly probable, and we are very likely to arrive at a conception of the disease similar to that entertained for the lobar affection. The tendency of the present time seems to lead to the diminution of the importance attached to the local lesion and to the increased importance of the nature of the infecting organism and of the powers of resistance of the infected individual.

Typhoid in Paris.—In 1882 the deaths from typhoid fever in Paris were 142 per 100,000 inhabitants; to-day the proportion is only 10 per 100,000.

TREATMENT OF BRONCHOPNEUMONIA IN CHILDREN.*

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What are we to treat, a lesion, or a patient with lesions?

Pulmonary inflammation in a child under three years is commonly bronchopneumonia because of anatomical peculiarities, among which may be mentioned much loose connective tissue, abundant lymph spaces, transitional (young, embryonal) cells, and, of course abundant blood vessels and unstable nerve centers. Given young tissue, mixed infection of pus-forming cocci, varying in virulence and rapidity of growth, in a subject exhausted by a previous disease, and we have all the elements to account for the irregularities of onset, course, ending and pathological findings. At autopsy we find masses in one lobe, or scattered masses in all lobes or a whole organ soggy and dripping with seropurulent exudate.

This is what we are to treat then—a case, or a patient with a pulmonary apparatus which is more or less in a condition of a pulmonary erysipelas or pulmonary cellulitis, with associated severe prostration, bacteriemia, septicemia. I believe we will make some progress in our conception of the disease, and in our rational treatment, if we think of bronchopneumonia as a pulmonary cellulitis, or a pulmonary erysipelas.

Bronchopneumonia is characterized by irregularities. It is commonly a secondary disease, incited by mixed infection, all the elements of the lung being, to a variable degree involved. The prognosis of the patient is uncertain because the child is twice a patient, exhausted by a second disease.

That household bogy—"catching cold" is less feared than formerly in connection with vaccination wounds, sprained ankle and erysipelas. This is a favorable time to think of bronchopneumonia as an infectious disease with active febrile movement. At present it is almost needful to withhold the name pneumonia from the parents; in order to do justice to the patient. Happily, at this date, in the progress of time and medicine, we no longer think a typhoid patient has caught cold if he develop bronchitis or that a facial erysipelas patient has suffered from a draught of air, if he adds empyema to his ailments. Mastoiditis does not cause the physician to be accused of needlessly exposing a scarlet patient. The poor doctor is always to be blamed, but he has promise of some relief; sometime the blame will be thrown upon the patient, his run down condition and his germ.

Who can forget Alonzo Clark's courageous act in letting air into the typhus wards? To-day a typhus in a tent would not excite a remark.

Prophylactic Treatment.—I shall mention but one, antitoxin—that is the immunization of diseases liable to diphtheria complications, in institution epidemics. This may apply to the crowding of measles patients especially. No physician can longer afford the opprobrium of the bad results following the omission of this precaution, even if it be possible that he is congenitally deficient, either in medical judgment or conscience. Immunizing measles cases when grouped, prevents the complications of diphtheria and much of the subsequent pneumonia.

I shall not take the time of this audience to drone over the prescriptions for pneumonia in infants. I shall give only my own ideas of treating a patient whose pulmonary tissues are, every element of them, stroma, cells, lymphatis and blood vessels reacting to overcome the deleterious effects of various growing, pus-forming cocci. We are told by the blood students and pathologists of a struggle of body cells and serum against cocci and toxins, of homemade antitoxins, and a shadowy suggestion of a kind curing Nature. I mean to dwell upon hygienic aids, and this not being a cyclopedic paper or audience, I may not be blamed if I omit drugs. The walls of this Academy know very well that drugs have had their innings.

TREATMENT.

How shall we help a patient with bronchopneumonia to get well? How give Nature a fair field for the struggle? In preparing this paper I have drawn upon the experience of several years. The problem is how to sustain the patient in overcoming the toxemia, the manifestations being fever, stupor, restlessness, delirium, disturbed circulation, heart fatigue and persistent cough.

Hygienic Treatment.—1. Fresh air, preferably a large room, southern exposure, sun swept; bed in middle of room, eyes directed away from bright light. Air should be fresh, cool and flowing. Temperature below 65° F. Nurses may need extra wraps. Flowing and fresh mean the same. A child with a lame lung should not breathe five times when three times will do. With limited capacity the lung demands oxygen in the natural proportions to be found in the atmosphere. The above conditions apply to a child in sthenic febrile reaction.

How about "catching cold?" In my opinion such a patient is no more liable to catch cold than a case of erysipelas of the face or leg, no more than a scarlet fever patient in its early sthenic reaction to poison. The freshly liberated poison in a patient capable of bounding reaction, summons into response all of Nature's resources of protection, and acts as a sharp stimulant.

You may recall the story of the burning of a pneumonia hospital in the mountains of Western Virginia, in war times. A sharp snowstorm and exposure of overtired soldiers, brought down a large number of pneumonias. Overtaxed heating apparatus burned up the hospital. There was a wail reiterated through the papers of the land, that all these unfortunate soldiers must die because they were lying in the snow, with only a canvas stretched over barrels to protect them. They all got well.

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No one catches cold from fresh air entering the nostrils or from fresh, cool, flowing air striking the oval of the face. An overworked débutante, emerging from a hot theater, with her face puffed and dusky from a blood full of second-hand breaths, may catch cold because her defenses are down and she easily succumbs, but I have never any fear of a fever patient catching cold in bed.

2. Water, plenty of it in small quantities, cool and fresh. It both refreshes and facilitates natural elimination. I intend to reiterate the word "refresh" in the treatment of pneumonia. Refresh the patient with cool, fresh air. Refresh with water, and plenty of both.

3. Quiet and rest. The one thing in treatment easily forgotten is tranquillity and restfulness. Pneumonia patients are nervously susceptible to noise and confusion and worn out by it. A tearful grandmother should be removed. A single trained nurse of congenial temperament should be in sole charge. The sickroom should not be the gathering room of the clan; Sunday afternoons should not find the door of the patient's room ajar to every pusher and to every push. But yesterday I was obliged to clear a room of two old women, four big sons and a pug dog, leaving two doctors, a patient and a nurse.

4. Free evacuation of the bowels at the very outset. This should be effected by castor oil in full doses, with or without previous calomel. Never give anything but full doses of castor oil, full for the age. Good cleansing of the intestinal tract is the first aid to the injured. Something seems to happen to the intestinal contents at the first moment of the febrile onset. It thenceforth appears to contain an absorbable poison, the removal of which often allows the fever to fall abruptly. If the fever rises subsequently, in spite of elimination, the diagnosis and course of treatment are clear.

5. Correct indigestion; regulate the food to avoid fermentations and gas. This is often the most troublesome feature of a case. Avoid cough syrups and fermentable foods. The pressure upon heart and lungs by a gas-filled stomach and colon does not leave a fair field to nature. To correct this condition, when present, high rectal irrigations of a hot salt solution act favorably.

6. Antipyretics. Make use of sponging or cold applications of water administered in any way to reduce temperature without disturbing or worrying the child. But remember it is possible to do harm in this way, often more harm than good. Just here let me say, that if every clinical thermometer should fall to the tile floors with a crash, to-night, though all other cases might suffer, not a pneumonia case would. That ever-present, blessed thermometer, like a stepmother, may be bad, or a misfit. Our students are drilled to begin something the moment the thermometer points to 102.5° F. They generally begin to move at 102.5° F. before they can remember which disease it is requires antipyretics.

To judge of a pneumonic child stand at the foot of the bed ten minutes, watch and think. Take your stethoscope and leave the thermometer and prescription book in the bureau drawer at home. One other point; try by example and precept, line upon line, to drill it into the minds of nurses to take some observations besides those recorded on the thermometer. It is a fault in our nurses' training that they never take the respiration of an infant or child. They always take the temperature, sometimes the pulse, but never the respiration. The consequence is that the physician usually has to do that himself. It is the toxemic symptoms, fever, stupor, restlessness and delirium, which suggests the line of treatment. What the thermometer reads is of very little consequence. Different patients bear temperature variously.

An ice cap to the head: Well, to put it into words, we usually apply ice caps to the hair. A polar bear takes his nap after lunch most comfortably on an iceberg. He simply curls up in his hair, on his ice cap, and dreams of honey and grapes. Hair is so poor a conductor of heat, the scalp must often wish it were bald. A cloth wrung out in cold or cool water and applied to the forehead and temples, with frequent sponging of the face, wetting of the lips and sponging of hands and wrists, accomplishes much. It refreshes and cools.

7. Heart stimulation is not always needed. I have come to think that when a heart is acting badly in pneumonia, it is time to see how much gas is in the abdomen, how clammy and cold the feet are, how hot the head. I tell a nurse to quit recording temperature, to take the respiration and the pulse, but every time she takes temperature, to take the toes; in other words, to see if the feet are cold. A child with cold feet cannot digest. Gas forms, the heart cannot find room to beat regularly. It makes me *think* something to find a nurse reporting an intermittent pulse and giving heart stimulants, and on arrival I find the patient's feet and hands are cold and clammy. Hot foot-baths cure that kind of heart trouble. Give the foot-baths with or without mustard. It's the *heat* we want, heat sufficient to puff the feet, red and hot and swollen with blood which had made up its mind to go elsewhere. Give the foot-bath under the bed clothes. I never saw a Junnaud's boot, but as I understand it, it was one grand cupping glass to draw the blood into one leg. I approve of that part of it. To stimulate the heart, relieve its embarrassment by hot, high salines and hot foot-baths.

8. Promote general comfort. This most important aid calls for tranquillity of surroundings, sponging the face, wetting the lips, not too frequent dosing and feeding and allowing long sleeps, and the employment of congenial, tactful nurses.

Things to Avoid.—Avoid all constriction of the chest; swathing poultices. Poultice for pain only.

Avoid maceration of the child's skin. Change to warmed dry garments often enough to avoid it. Keep patient comfortable.

Avoid disturbing the child's needed rest. When the critical sleep comes to a previously restless child, recognize it and do not disturb it.

Avoid steam and canopies. They are good in catarrhal laryngitis with spasmodic cough, but not for bronchopneumonia for they rob the patient of oxygen. The indications for foot-baths are: Restlessness, drowsiness, dusky, flushed face, and persistent, nagging cough. The results are quiet sleep, averaging two to four hours; prompt relief of cough, flush leaving the face in fifteen minutes, followed by sleep immediately thereafter. In fact, it is a result which is satisfactory and encouraging to physicians, nurses and parents. If all who witness the effect of treatment day by day, approve it, especially the parents of an only child, there is something good in it.

My contention is for fresh air, cool and flowing, for the full proportion of oxygen natural in the atmosphere. No secondhand breaths for lame lungs. Call the case pulmonary fever or pulmonary cellulitis, and treat it rationally. I have seen such favorable changes from removing a child from an inner sunless room to a room with two open windows, changes in color and in mental condition that I am sure I cannot be mistaken about the good result. I have seen the same good results in robust adults and in infants, and all ages and conditions between. Have I seen any bad result? No. I never saw anything but good in giving air and water to a fever patient. My impression is one cannot give too much. Our city houses are full of exhalations of human beings, permeated by furnace gas and escaping illuminating gas, full of dust, and overheated. A person overtired and worn out from loss of sleep is caught by cold.

To summarize how to cure a baby with bronchopneumonia.—1. Castor oil to clear the field of operation. It is the first aid to the injured.

2. Fresh air, cool and flowing. It reddens the blood, stimulates the heart, improves digestion, quiets restlessness, aids against toxemia. Regulate the temperature of air of the room inversely to that of the child. The patient's feet must always be warm, and the head cool.

3. Water, plenty, inside and outside. Temperature of the water as indicated by child's temperature.

4. Quiet and rest. Tranquilizing influences about patient. Undisturbed sleep.

5. Correct feedings to avoid fermentation and gas in abdomen. If there is need, high hot salines.

6. Antipyretics. Water. No coal-tar products.

7. Heart stimulants. Fresh air, hot foot-baths. Relieving tympanites and crowding. Hot foot-baths and hot salines can be given in a cold room. Both can be given under the bedclothes.

Drugs.—Whisky and strychnine. These are the first drugs mentioned in this paper, unless that household remedy, castor oil, be included. Promote general comfort in every rational way.

How to Kill a Baby with Pneumonia.—Crib in far corner of room with canopy over it. Steam kettle; gas stove (leaky tubing). Room at 80° F. Many gas jets burning. Friends in the room, also the pug dog. Chest tightly enveloped in waistcoat poultice. If child's temperature is 105° F. make a poultice thick, hot and tight. Blanket the windows, shut the doors. If these do not do it, give coal-tar antipyretics and wait.

THE BEHAVIOR OF THE COSTAL ARCH IN DISEASES OF THE ABDOMINAL ORGANS AND ITS IMPORTANCE AS A DIAGNOSTIC SYMPTOM.

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(Continued from Page 774.)

Case IX. Cholelithiasis in the Quiescent Stage.—M. K., aged forty-six years; admitted to the hospital December 11, 1901. Patient has always enjoyed excellent health until five months ago, when she suffered from an attack of dysentery lasting five to six weeks. Three months ago patient was seized with a severe attack of vomiting and of abdominal pain over the region of the gall-bladder, lasting for several days. There was slight jaundice and costive, slightly clay-colored stools. Since then the attacks have recurred every few days, their onset being favored by the ingestion of any form of solid food. During each attack she is prostrated and unable to attend to her household duties. The constipation is constant.

Examination on Admission.—Patient is very corpulent, with a large, pendulous abdomen. There is slight icterus. There is tenderness over the region of the gall-bladder. There is rigidity of the corresponding portion of the costal arch of moderate degree but no rigidity of the adjacent segment of the rectus muscle.

Operation (Gas and Ether).—An oblique incision, parallel to the lower border of the costal arch, was made, with its center over the region of the gall-bladder. This organ was found completely embedded in adhesions and of small size. It had been drawn nearly to the median line by the contraction of the tissue in which it was embedded, and was adherent to both the stomach and the under surface of the liver. The gastro-hepatic omentum was very considerably shortened, the lesser curvature of the stomach lying close to the under surface of the liver, and the foramen of Winslow obliterated. The gall-bladder was very atrophic, and its wall a thickened mass of connective tissue. It was opened and several small calculi and considerable calculus detritus was removed. Owing to the density of the adhesions, it could not be separated from the adjacent liver without undue risk of hemorrhage. A tampon of gauze was then inserted down to the orfice and into the cavity of the atrophic bladder, it being impossible to approximate it to the parietal peritoneum. Closure of the incision in layers on either side of the drain.

Postoperative.—The patient suffered intense pain for forty-eight hours, at the end of which time the biliary fistula became established. The vomiting was also persistent for three days, until the bowels moved. There was no distention. After the third day rapid improvement, the further convalescence being uneventful and the fistula completely closing in six weeks. December, 1902. Except for slight rheumatic pains, patient has had excellent health since the operation.

Case X. "Perihepatitis."—E. B., aged fifty-five years; admitted to the Presbyterian Hospital December 6, 1902. Patient has always been well. No history of venereal difficulty. No alcoholic habit. Three days before admission to the hospital, after exposure to cold, patient suffered from a chill, with pain in the lower right side of the chest, both in front and behind, the right hypochondrium being sensitive to pressure. There was fever, cough, which was dry, prostration, and the patient was confined to bed. The pain persisted and was cutting in character; it was intensified by deep inspiration. The bowels were constipated and the urine was high-colored.

Examination on Admission.—The conjunctivæ are icteric. The entire abdomen is rigid, the rigidity being most marked in the right upper quadrant over the region of the gall-bladder. There is a very distinct resistance of the upper half of the right costal arch. The temperature varied between 101° and 104° F., the pulse from 88 to 104. The leucocytosis in several examinations varied between 16,000 and 20,000.

Operation (Chloroform).—A vertical incision was made parallel to the outer margin of the right rectus. The lower part of the peritoneal cavity was free from adhesions, but there was a distinct increased intra-abdominal tension characterized by the tendency of the intestines to prolapse through the abdominal incision. The gall-bladder and ducts were normal. Exploration of the liver with a hypodermic needle gave a negative result. The entire upper surface of the right lobe of the liver was joined to the diaphragmatic and parietal peritoneum by numerous adhesions of varying density which were separated from their point of attachment on the liver only with considerable difficulty. In other respects, the liver appeared normal. The adhesions were broken up, and the abdominal wound closed in layers, a cigarette drain being left in the lower angle.

Postoperative.—On the morning after the operation the patient declared that he was free from pain and that he felt very much better. The improvement steadily continued, and at the end of a week both the pulse and temperature had returned to normal. The would healed *per primam,* and at the end of four weeks the patient returned to work feeling perfectly well. December, 1903. Patient has enjoyed excellent uninterrupted health since the operation.

Case XI. Sarcoma of the liver.—K. H., aged forty-nine years; admitted to the Presbyterian Hospital March 2, 1903. Previous history negative. About eighteen months ago patient suffered from occasional sharp pains in the right iliac and lumbar regions. These occurred in attacks about once a month and were accompanied with vomiting. A physician, called in attendance at that time, diagnosed "abdominal tumor." These symptoms continued until five weeks ago, when the pain became more severe and was brought on by the slightest exertion. For the greater part of that time the patient has remained in bed. The bowels have been habitually constipated. There has been no jaundice. There has been considerable loss of flesh and strength.

Examination on Admission.—There is asymmetrical bulging of the abdominal wall, the right side being protruded by some underlying growth which extends a distance of three inches to the left of the median line. Above, it disappears beneath the costal arch, and below, in the median line, it extends to within two inches of the symphysis. There is asymmetrical respiratory movement of the costal arches, the right remaining almost motionless during expiration. On palpation, the bulging is found to be due to the presence of an abdominal growth moderately elastic, yet of firm consistency, with a smooth surface. Above, it is lost beneath the right costal arch, which cannot be depressed toward the vertebral column, and below, by rectal examination, the mass can be felt to occupy the upper part of the pelvis. Percussion over the tumor yields a flat note, continuous above with the liver flatness. The mass can be removed slightly from side to side without much discomfort to the patient.

Operation (Gas and Ether).—Incision parallel to the outer border of the right rectus, extending upward above the level of the umbilicus. On opening the peritoneal cavity, the mass was found to be adherent to, and to infiltrate extensively, the anterior abdominal wall. The abdominal wound was closed after a portion of the tumor had been removed for subsequent microscopical examination.

Postoperative.—The patient recovered from the effects of the operation, but her general condition gradually became weaker ,and death occurred in about two weeks. Microscopical examination of the tumor, which was evidently primary in the liver, showed it to be a spindle-cell sarcoma.

Case XII.—L.L., male, aged thirty-five years; admitted to the Presbyterian Hospital April 14, 1902. Moderate alcoholic habit. There is no history of colitis. About nine months ago patient suffered from an attack of catarrhal appendicitis, from which he recovered without operation. With this exception he has always been well and able to work. Ten days ago he was suddenly seized with severe pain in the epigastrium, equally pronounced on both sides. It was accompanied by chill, followed by fever and sweating. There was no vomiting. These symptoms have continued except for short intervals, the pain being so severe as to interfere with sleep.

During the past week the pain has become localized in the right hypochondrium and epigastric regions, and tenderness has developed. The bowels have been constipated, no movement have taken place for the last three days. The stools have been of normal color. There has been no jaundice. During this time the prostration has been sufficient to confine the patient to bed.

Examination on Admission.—There is diminished respiratory movement of the upper part of the abdomen and of the costal arch. On palpation, in the middle line, extending from the ensiform appendix to within one inch of the umbilicus, is a mass of which the surface is smooth, the consistency elastic. It is tender under pressure, and extends farther to the right than to the left of the median line. The pain is increased by deep respiration and also by efforts to turn the body from right to left. The mass moves up and down with the respiratory movement of the liver. There is rigidity of the upper portions of both costal arches, more marked, however, on the right than the left side. There is some rigidity of the adjacent portions of the recti muscles. The temperature is 102° F., varying between 101° and 103° F. The pulse remains under 100. There is 15,000 leucocytosis.

Operation (Gas and Ether).—Incision in the median line above the umbilicus. The wall of the abscess cavity was found adherent to the parietal peritoneum, and the cavity was opened, evacuating about one pint of pus, without entering the general peritoneal cavity. The size of the abscess cavity was about that of an orange, and the pus was thick and of a red color. Partial suture, with a rubber drain enveloped in gauze.

Postoperative.—There was immediate relief from the pain, with prompt return of both pulse and temperature to normal. The abscess cavity gradually closed by granulation without the leakage of bile. For weeks after the operation, a sinus, about one and one-half inches deep, remained, subsequently closing. December 1, 1902. Patient had enjoyed excellent health since leaving the hospital. A slight rupture has developed in the lower part of the cicatrix.

Case XIII.—R. D., male, aged twelve years; admitted to the Presbyterian Hospital November 2, 1902. With the exception of chronic ear difficulty following one of the exanthemata, patient has always enjoyed excellent health. On October 17 last, patient was operated on at the Manhattan Eye and Ear Hospital of this city for mastoiditis with thrombosis of the lateral sinus. The mastoid cells were thoroughly opened and the internal jugular vein ligated about the center of the neck. The patient made an excellent recovery from the effects of the operation, both pulse and temperature becoming normal at the end of the tenth day, and both the wounds presenting a healthy granulating appearance. Two days ago, without known cause, patient developed very sharp pain in the right hypochondrium. This pain was manifested in attacks of several minutes' duration, at intervals of from half an hour to one hour, and was accompanied by a rise in temperature to 102°, and of the pulse to 130. There was no chill. During the next twenty-four hours the pulse rose to 180, the temperature to 104°, and the patient was transferred to the Presbyterian Hospital for possible operation.

Examination on Admission.—On inspection, there is a marked bulging of the right hypochondrium, extending as low as the level of the umbilicus. The corresponding portion of the costal arch is displaced forward and shows diminished respiratory movement. On palpation, the mass is smooth, elastic, and very tender, moving up and down with respiration. There is very pronounced rigidity of the overlying costal arch and of the adjacent muscle. There is slight rigidity of the left costal arch. Patient lies on the right side with the thighs flexed, any change from this position intensifying the pain. There is 23,000 leucocytosis.

Operation (Chloroform).—A vertical incision was made along the outer border of the right rectus, extending from the costal arch downward. On opening the peritoneal cavity, a small amount of serous fluid escaped, and the enlarged right lobe of the liver bulged prominently into the wound. A needle inserted into the most prominent part of the right lobe withdrew turbid opaque fluid of a gray color and entirely free from odor, at a depth of about two inches. The track of the needle was enlarged with the cautery and several ounces of this fluid evacuated. The cavity was drained with both gauze and tube.

There was considerable restlessness for twenty-four hours. Both pulse and temperature fell slowly for six days to 101° and 100° F. respectively. There was then, without known cause, a shoot of temperature to 104° F., and of the pulse to 120, without wound-disturbance discoverable. Both gradually subsided, reaching normal at about the end of a month. There was no vomiting at any time, the patient taking considerable quantities of fluid nourishment.

The discharge from the wound was yellow and abundant for the first ten days, gradually diminishing as the cavity closed. At the end of a month a superficial sinus only remained. At this time no enlargement of the right lobe could be detected by bimanual examination. Seven weeks after the operation patient left the hospital entirely healed, and remained in excellent health until the following April 21, when he was readmitted suffering from bronchitis and a pleurisy over the lower part of the right lung. Both of these conditions disappeared in the course of ten days, and since that time there has been no further trouble.

Through a misunderstanding, the fluid removed was not subjected to a rigid examination. Cursory examination showed it to contain a considerable number of leucocytes, and to be relatively free from any of the bile constituents.

Case XIV.—A. M., male, aged thirty-one years; admitted to the Gouverneur Hospital May 29, 1902. Previous history negative. Several days before admission patient developed the symp-

toms of fever, which did not subside, and he was brought to the hospital. On admission he was found to be probably suffering from typhoid fever, the diagnosis being subsequently rendered certain by the presence of the "Widal" reaction. For the first three weeks the course of the fever presented nothing materially different from the typical case. During the fourth week there was an increase in the temperature and in the rapidity of the pulse; at the same time the patient complained of pain in the right hypochondrium over the region of the liver. Examination showed rigidity of the upper part of the costal arch with tenderness on pressure. No enlargement of the liver could be detected. There was a leucocytosis of 15,000. Exploration was advised, but refused until July 2. During this time the pain and tenderness increased and the curve of the temperature was that ordinarily seen in collections of pus. The rigidity of the arch had also extended to its lower portion.

Operation (Gas and Ether).—Through a vertical incision parallel to the outer border of the right rectus above the umbilicus the peritoneal cavity was opened and the upper surface of the liver exposed. At a depth of two inches in the right lobe an abscess cavity was detected and pus withdrawn with a hypodermic needle. The pus was evacuated, the liver tissue being divided with a cautery, along the needle as a guide. Drainage with tube and gauze.

Postoperative.—The patient reacted well from the operation and was considerably relieved, there being marked improvement in both the local and constitutional symptoms. The upper portion of the arch resumed its normal resiliency, but the lower portion still remained rigid. Before the expiration of a week the temperature and pulse became higher, and pain and tenderness developed over the region of the liver behind, the resistance of that portion of the arch becoming more marked. There was also an increase in the pre-existing leucocytosis.

Operation July 16 (Gas and Ether).—An oblique incision was made parallel to the twelfth rib posteriorily, the rib excised subperiosteally, and the lowest angle of the pleural cavity opened. There were no adhesions. The opposite diaphragmatic pleura bulged into the wound and, after the withdrawal of pus with a needle, the diagram was incised, opening a large subdiaphragmatic abscess extending into the posterior portion of the right lobe of the liver. This was drained with gauze and diaphragmatic surfaces. The patient reacted well from the operation and drainage was very satisfactory. There was marked subsidence of the local pain and tenderness. The temperature, though somewhat lower, still ran a pyemic course, and the patient gradually became weaker, dying from exhaustion five weeks later.

Case XV.—E. F., male, aged forty-eight years; admitted to the Presbyterian Hospital February 25, 1901. Patient is an Italian, and a satisfactory past history is difficult to obtain. Five weeks ago he was treated in one of the city hospitals with the history of pain in the back and the right hypochondrium for an indefinite length of time. There were no constitutional symptoms of fever. On exploratory operation, the liver was found to extend two inches below the level of the costal margin. Aspiration of the right lobe withdrew no fluid. The abdominal wound healed *per primam,* but the patient developed an irregular temperature and some jaundice, with progressive loss of flesh and strength. The pain in the right hypochondrium still persisted.

Examination on Admission.—The patient is poorly nourished and cachetic. There is slight icterus. There is a well-marked projection of the right hypochondrium, the respiratory movement of the costa larch being diminished. There is dilatation of the surface veins. On palpation there is a smooth mass, deeply seated, projecting inferiorly below the level of the costal margin, a distance of two inches, of which the lower border is indistinct. There is well-marked rigidity of the corresponding portion of the costal arch and of the adjacent rectus muscle, with some tenderness on pressure over the center of the tumefaction. Patient's temperature ranged from 101° to 102° F., the pulse around 100. There was moderate leucocytosis.

Operation (Gas and Ether).—A vertical incision was made along the upper outer border of the right rectus in the line of the cicatrix. On opening the peritoneal cavity there were no adhesions. The right lobe of liver was enlarged and projected several inches below the costal margin. A needle inserted into its prominent portion withdrew pus at the depth of about one and one-half inches. The pus was thick and of a creamy-yellow color. The needle was left *in situ,* iodoform gauze being packed around its point of emergence from the liver, thus shutting off the peritoneal cavity, and at the end of four days the abscess cavity was thoroughly opened along the line of the needle with the Paquelin cautery. The cavity was about the size of a cocoanut, and contained over a quart of pus.

Postoperative.—There was gradual subsidence of both pulse and temperature, reaching normal on the sixteenth day. There was immediate cessation of the pain. For the first few days the discharge from the abscess cavity was very profuse, and contained a considerable amount of bile. It then gradually diminished, and at the end of two weeks was very slight. On the sixteenth day after the operation, pain developed in the left hypochondrium, and the biliary fistula manifested a marked increase in activity. There was a rise in both pulse and temperature. The leucocytosis was again increased to from between 12,000 and 16,000. On examination, there was rigidity of the left costal arch near the junction of the eighth and ninth costal cartilages and of the adjacent rectus muscle, with tenderness on pressure. After four days the patient finally consented to an exploratory incision.

Second Operation (Gas and Ether).—A verti-

cal incision was made along the outer upper border of the left rectus. The peritoneal cavity showed evidence of adhesion. The left lobe of the liver was normal in appearance. A needle inserted, however, withdrew a small amount of pus at a depth of two inches. The opening was immediately enlarged with the cautery and several small abscess cavities enlarged into one with the finger. Rubber tube and gauze drainage.

Postoperative.—The patient made an excellent recovery, both local and constitutional symptoms disappearing promptly. The discharge from the biliary fistula on the right side rapidly decreased, and on leaving the hospital the patient had gained weight and was in very much better condition than at the time of his admission. June, 1902. Patient has gained forty pounds during the past year and has enjoyed excellent health. No culture could be found in the pus.

Case XVI. Subdiaphragmatic Abscess Complicating Acute Appendicitis.—M. H., aged eight years; admitted to the Presbyterian Hospital June 20, 1901. Previous history negative. Five days ago patient was seized with sudden severe pain in the right lower quadrant of the abdomen. At the end of two days, during which time the pain recurred at intervals, patient developed vomiting, diarrhea, and prostration, with excessive abdominal tenderness. The vomiting and diarrhea ceased at the end of twenty-four hours, but the weakness and prostration persisted and became more pronounced.

Examination on Admission.—The entire abdomen is swollen, especially on the right side. There is no expiratory recoil of the right costal arch. Moderate recoil of the left arch. The right half of the abdomen is excessively tender and rigid. The right costal arch is protruded slightly forward and cannot be depressed even for a short distance toward the vertebral column. There is some rigidity of the left abdominal wall, especially in the lower half, but it is less marked than on the right side. The temperature is 104° F., the pulse 140 and weak, the respiration 46. Leucocytosis taken twelve hours after operation amounted to 17,000.

Operation (Gas and Ether).—Incision along the outer border of the right rectus muscle, extending from the region of the appendix to the costal arch above. The opening of the peritoneal cavity was followed by the evacuation of a large amount of pus, which distended a cavity reaching from the brim of the pelvis below to the lower surface of the diaphragm above, extending both in front of and behind the liver. That portion of the pus situated in front of the liver escaped only after the costal arch was elevated by the surgeon's hand. The appendix was gangrenous and was removed by ligation and cauterization of the stump. The abscess cavity was carefully cleansed with peroxide of hydrogen and was drained both above and below with tubes and strips of gauze, a counter-opening being made posteriorly along the lateral margin of the colon, and a gauze tampon being introduced between the upper surface of the liver and the anterior abdominal wall. The middle part of the wound was held together with one suture.

Postoperative.—On the day following the operation temperature rose to 106° F., the pulse varied between 150 and 160, and there was considerable restlessness and delirium. There was no vomiting nor tendency to an increase in the distention, and the patient retained a considerable amount of fluid nourishment. There was moderate peristalsis over the left side of the abdomen. On the second day flatus escaped from the rectum, the bowels moved, and there was progressive diminution of both pulse and temperature, reaching 120 and 103° F. respectively on the third day. From this time on, there was gradual improvement, continuing for two weeks and a half, the temperature ranging between 101° and 102° F., the pulse around 120, and the wound draining very freely both in front and behind. At the end of this time the constitutional symptoms of sepsis increased in severity and there seemed to be slight retention of pus in the upper portion of the wound. Three days afterward expectoration of pus occurred, followed by symptoms of collapse and the death of the patient. No autopsy was allowed, but the extension of the suppurative process along the lymphatics in the diaphragm had evidently not been successfully checked by the operation and had caused the fatal issue.

Case XVII. Acute Pancreatitis.—E. P., male, aged twenty-eight years; admitted to the Presbyterian Hospital June 13, 1901. Previous history negative. Three days before admission the patient experienced some abdominal pain, with one attack of vomiting and general malaise. The bowels were constipated and failed to move since. There was no chill. The prostration steadily increased, and the abdomen has become more tender and moderately distended. He has taken no nourishment. His chief complaints are pain and prostration.

Examination on Admission.—Patient is a well-nourished and muscular man. The entire abdomen is markedly distended. The abdominal pain is general and not referred to any one point. On palpation, there is general abdominal rigidity, most marked in the right upper quadrant. There is increased resistance in the upper part of the right costal arch. There is slight dulness in both flanks, especially the right. On auscultation, peristaltic sounds are heard over the entire abdomen. The urine has a specific gravity of 10.44, is of acid reaction, contains twelve per cent. (by volume) of albumin, and on microscopical examination numerous hyaline and granular casts are found. On admission, temperature was 103° F., the pulse 124 and very weak, and the respiration 28. There was a leucocytosis of 27,000.

Operation (Gas and Ether).—An incision four inches long was made along the outer border of the right rectus above the umbilicus. The peritoneal cavity contained considerable quantities of dark-brown fluid not encapsultated and most

abundant in the right upper quadrant. As it was sponged away, it seemed to be renewed by similar fluid emerging from the foramen of Winslow. The small intestine was moderately distended. The gall-bladder, the gall-ducts, and the appendix were normal. The head of the pancreas was swollen and of peculiar "boggy" consistency. After the careful cleansing of the upper right peritoneal cavity a Mikulicz drain was inserted down to the region of the foramen of Winslow, and the lower part of the wound closed by interrupted suture. Although the operation was quickly performed, the patient's pulse became so feeble as to require an infusion.

Postoperative.—On the day after the operation the pulse rose from 132 to 150 and could scarcely be felt at the wrist. The temperature varied between 103° and 104° F. The patient was restless and perspired profusely. There was no vomiting, and the patient retained considerable quantities of fluid nourishment. Owing to the weak condition of the pulse, hypodermoclysis was given. On the second day after operation the pusle varied between 130 and 140 and was slightly stronger. The temperature varied between 102° and 103° F. The extremities, which had been cold, became warmer. Several hours after the administration of a laxative, there were several dejections consisting of solid and semi-solid brownish material. The patient declares that he feels perfectly comfortable. From this time on there was steady and gradual improvement, the temperature reaching normal on the sixteenth day. Four weeks after the operation the patient left the hospital with a small sinus. The subsequent history of the patient is unknown, repeated endeavors to communicate with him have failed.

Case XVIII. Large Pancreatic Cyst.—A. B. M., male, aged thirty-nine years; admitted to the Presbyterian Hospital October 6, 1902. Patient's sister had an ovarian cyst. Patient was a hard drinker of whisky until several years ago, since which time he has touched no liquor of any kind. Has always used tobacco in moderation.

Seven years ago patient was seized with an attack of sharp pain, knife-like in character, referred to the left hypochondrium and intensified by inspiration. It was accompanied by vomiting and prostration, the former ceasing after several days, the latter being so severe as to confine the patient to bed for five weeks, during which time the attending physician noticed a swelling in the left side, which was so small as not to be appreciated by the patient. These attacks were repeated, recurring at first every month, subsequently at increasing intervals, until two years ago, at which time they ceased entirely. No attack lasted for more than forty-eight hours, nor did any attack confine the patient to bed.

The tumor has steadily increased in size, especially at the time of an attack, and for the past six years has been noticeable to the patient. There has been progressive loss of flesh and strength, the patient weighing thirty pounds less than he weighed seven years ago, and the weakness having become more pronounced during the past two years, and there has been some shortness of breath. At present the swelling has reached so large a size as to be inconvenient, and this, together with the general weakness and shortness of breath, constitute the chief complaints.

Examination on Admission.—The abdominal cavity is the site of an asymmetrical swelling involving the entire left side and extending for a distance of three inches, in its most prominent portion, to the right of the median line. The greatest convexity of the overlying abdominal wall is seen in the left upper quadrant, and the corresponding portion of the costal arch is pushed prominently forward and has no expiratory recoil. There is also extensive bulging of the left flank and ileo-costal space. On palpation, the tumor is smooth, of elastic consistency, and by bimanual examination a fluid wave may readily be detected passing from its upper right to its lower posterior portion in the ileocostal space. There is no fremitus. The portion of the tumor overlying the abdominal aorta left costal arch, and any effort to depress it toward the vertebral column encounters distinct elastic resistance. There is slight descent of the mass during inspiration. On percussion, the entire tumor is flat, being continuous above with the area of cardiac dulness and obscuring the normal area of splenic dulness. The intestinal resonance is situated chiefly in the lower right quadrant of the abdomen. By inflation, the stomach and descending colon are found to lie anterior to the cyst. Repeated examination of the stools give no evidence of the presence of undigested fat, and there is no glycosuria or other abnormal condition of the urine. The general condition of the patient is fair, the heart action of good force and regular.

Operation. October 15 (Gas and Ether.—Vertical incision two and one-half inches from the median line, extending an equal distance above and below the level of the umbilicus, and situated over the most prominent part of the tumor. On opening the peritoneal cavity, the smooth, pearly cyst-wall presented, with the splenic flexure lying on its anterior surface. This was reflected with some difficulty a short distance toward the median in order to bring the contemplated opening through the cyst wall directly opposite the abdominal incision. The entire cyst was retroperitoneal and so firmly adherent to the stomach, the colon, the spleen, and the posterior abdominal wall, as to render any enucleation impossible. The cyst was therefore emptied of its contents, consisting of several gallons of yellow turbid fluid, with a trocar and canula, and its interior explored through an incision in its anterior wall. In this manner the left kidney could be distinctly palpated behind it, and the pancreas, also posterior, could be felt a little higher up and near the median line. A counter-opening was made to the outer side of the kidney in the left ileocostal space, a portion of the cyst-wall being here excised without difficulty. The edge of the anterior opening in the cyst-wall was sutured to the cor-

responding edge of the divided parietal peritoneum, and after the insertion of drainage-tubes both in front and behind, into the cyst cavity, the upper and lower extremities of the abdominal incision were closed by suture.

Postoperative.—There was some vomiting and hiccough for several days, and the bowels moved with rather more difficulty than usually, responding to catharsis on the third day, followed by subsidence of the above symptoms. At no time was the pulse higher than 80, and there was but slight temperature elevation. The discharge from the anterior of the cyst was very slight. During the next ten days the bowels moved regularly, and patient was very comfortable, complaining only of occasional abdominal cramp-like pains. October 27. Patient vomited several times this afternoon. Bowels moved freely with enema. There was no rise in the pulse or temperature. October 28. Patient vomited again to-day. Some cramp-like abdominal pains developed. Bowels again moved after an enema. There was no abdominal tenderness. Pulse and temperature still continued normal. Some local distention developed in the right iliac fossa, evidently due to an inflated cecum. October 29. Distention increased, and the pulse rose to 100, the temperature to 101° F. An exploratory incision was deemed advisable. Under ether, an incision was made over the outer border of the right rectus, below the umbilicus, and the peritoneal cavity was found to contain a considerable amount of fluid fecal material. The perforation could not be found nor could its cause be ascertained. Drainage. Patient rapidly became worse and died the following morning.

Autopsy.—The site of the perforation could not satisfactorily be located. The cyst was found to spring from the tail of the pancreas.

Case XIX.—M. K., aged twenty-four years; admitted to the Presbyterian Hospital August 27, 1900. Eleven years ago patient was thrown from a wagon, but was not incapicated. Between two and three years later, kyphosis developed in the dorsolumbar region, requiring the application of an orthopedic corset.

Nine months ago, without known cause, painful and frequent urination suddenly developed. There were burning sensations over the bladder, intensified by micturition. Patient passed urine every two or three hours during the day and several times during the night. The urine was cloudy and "thick." These vesical symptoms have continued up to the present time, notwithstanding frequent irrigations of the bladder and the advantages of a change in climate. There have been progressive loss of flesh and strength and increasing anemia.

Examination on Admission.—There is a tender rounded mass in the left lumbar region, extending from the level of the crest of the ileum below to beneath the costal arch above and to within 1½ inch of the median line internally. The mass is lobulated, of elastic consistency, and slightly painful on pressure. The lower segment of the costal arch is distinctly rigid, and pressure on it elicits pain. By percussion the descending colon is found to lie anterior to the tumor. The mass descends slightly on respiration. Catheterization of the ureters by Dr. F. Tilden Brown elicited the fact that the urine from the right kidney was normal, while that from the left was scanty and contained large amounts of pus and cheesy material. Examination failed to detect the presence of tubercle bacilli in the urine of either kidney. The trigone was the site of numerous patches of ulceration, which were most abundant around the mouth of the left ureter. The patient's temperature varied between 100° and 104° F., the pulse between 100 and 120. There are physical signs of a healed tuberculous process in the upper part of the left lung.

Operation (Chloroform, followed by Ether).—The left kidney was exposed by a vertical incision along the edge of the erector spinæ, from the lower extremity of which a horizontal incision extended forward toward the umbilicus. The perirenal fat was scanty. The kidney was easily enucleated. It was double the normal size and irregularly lobulated, presenting the appearance of a multilocular pyonephrosis. The pedicle was ligated with heavy catgut. The ureter was traced downward to a point below its crossing of the external iliac vessels and was removed. It presented a beady appearance, and the part which crossed the brim of the pelvis was materially thickened and intimately adherent to the posterior parietal peritoneum and the iliac vessels. Irrigation of the wound followed by closure with chromic gut in layers, a cigarette drain having previously been inserted in the lower angle.

Postoperative.—The patient reacted well from the operation. During the first forty-eight hours there was considerable nausea, but the patient retained a moderate amount of fluids and passed twenty ounces (plus) of urine daily. Movement of bowels took place on the third day. The increased frequency of urination persisted, the urine, however, containing a small number of leucocytes only. The temperature varied between 100° and 103° F., gradually decreasing and reaching normal at the end of the second week. The wound healed down to the drain. At the end of five weeks, patient's general condition was more satisfactory than just prior to the operation. November 20. Since last note the patient has been gaining rapidly in strength. The sinus had closed and reopened. To-day, patient developed what proved to be a pleurisy with effusion on the left side. After three weeks this subsided, leaving the patient very weak. Slow convalescence. December 1, 1903. For the past six months the general condition of the patient has steadily improved. She has completely recovered, with the exception of the persistence of the increasing frequency of micturition at night, which, however, is not painful.

Case XX.—W. S., aged nineteen years; admitted to the Presbyterian Hospital May 18, 1903. General health has always been excellent. About

two months ago, patient was seized with severe sharp lumbar pain. Shortly afterward, the urine became cloudy. The pain at first was not sufficiently severe to interfere with the pursuit of the patient's studies. At the end of a month, patient was compelled to give up work, and consulted a physician. An exploratory lumbar incision was made in the lumbar region over the right kidney by a surgeon in a neighboring city and was completely closed by suture, healing by primary union within three weeks. The symptoms continued, and to the pain were added chilly sensations, and an irregular febrile movement with progressive loss of flesh and strength. Recently a tumor in the right flank has been noticed.

Examination on Admission.—There is a distinct bulging of the right flank, which is found to be occupied by a tumor reaching down into the right iliac fossa, extending upward beneath the right costal arch and as far forward as the edge of the rectus. It is smooth, highly elastic, and by bimanual examination fluctuation can be elicited. It is moderately tender. By percussion, the ascending colon lies anteriorly. There is well-defined rigidity of the lower segment of the right costal arch, and pressure on it causes pain. The temperature varies between 100° and 103° F.; the pulse varies between 90 and 110. There is leucocytosis. The urine is high-colored and contains only a small number of leucocytes, although previously it had contained considerable quantities of pus.

Operation (Gas and Ether).—The cicatrix of the previous operation was excised by an elliptical incision, which was deepened until the perirenal fat came into view. The enlarged kidney, surrounded by a very small quantity of fatty tissue, was readily enucleated, and its pedicle ligated with heavy catgut. The organ was more than double the normal size and was the site of a number of abscesses, one, consisting, of the dilated pelvis, of very large size. The temporary plugging of the ureter, which was in other respects normal with cheesy tubercular material, accounted for the fact that the bladder urine contained a small number of leucocytes only. The wound, after irrigation with salt solution, and the insertion of a cigarette in its lower angle, was closed by chromic-gut suture.

Postoperative.—The patient reacted well from the operation. There was no nausea. There was no diminution in the daily amount of urine. The temperature rapidly decreased, becoming normal at the end of the first week. The wound healed kindly, and at the time of discharge had almost closed. The patient's general condition continued to improve and he left the hospital much stronger than he was at the time of admission. December 1. The sinus has closed and reopened once or twice. His general condition has steadily improved.

Case XXI. Peri-nephritic Abscess.—M. P., aged fifty-nine years; admitted to the hospital October 23, 1902. Previous history negative. Three weeks ago, without known cause, slight tenderness appeared in the left lumbar region, with increasing prostration and loss of appetite. There was an irregular febrile movement. The bowels were regular, and urination was normal and regular. Four days ago the patient noticed a lump in the left flank. The prostration has confined the patient to bed for the past week. The chief complaints are the pain and the prostration.

Examination on Admission.—The left ileo-costal space is the site of a bulging mass, most prominent posteriorly. In front it extends to the margin of the rectus muscle. Behind, the overlying skin is slightly reddened and the tenderness most marked. There is rigidity of the lower segment of the costal arch. The tumor is everywhere dull, except where the descending colon passes anteriorly. The temperature is 101° F., the pulse 100, and there is 30,000 leucocytosis.

Operation (Gas and Ether).—An incision beginning near the border of the erector spinæ muscle and passing obliquely forward and downward in the ileo-costal space, was made over the most prominent part of the tumor. With the division of the transversalis fascia, a large abscess-cavity was opened, the pus being of dark brown color and very foul. By bimanual examination the kidney could be felt anterior to the wall of the abscess-cavity. The cavity was thoroughly irrigated with saline solution, and after the insertion of a good-sized rubber drain in the most dependent angle of the wound, its extremities were closed by interrupted chromic-gut suture.

Postoperative.—There was immediate relief of the pain and tenderness and a gradual subsidence of the fever. The abscess-cavity rapidly contracted, and at the time of discharge, three weeks later, only a sinus two inches in depth remained. This subsequently closed. June, 1903. Patient has enjoyed health during the past six months.

Case XXII.—M. C., aged twenty-eight years; admitted to the Presbyterian Hospital October 2, 1903. Patient has always been a moderate tea-drinker. Previous history negative until five months ago, since which time the appetite has been poor and the patient has been disinclined to eat solid food. There was no pain or vomiting, however, until one month ago. At that time a sharp shooting pain developed in the epigastrium, coming on suddenly in attacks of several minutes' duration without reference to the ingestion of food, and radiating in every direction. These symptoms were not sufficient to confine the patient to bed, nor was there any vomiting until the night before admission. At that time, the pain suddenly became very intense, and vomiting developed and was continuous. There was syncope, and the patient was obliged to discontinue work. The vomitus consisted of partially digested food, and afterward of mucus. At no time was there hematemesis of blood in the stool.

Examination on Admission.—The entire abdomen is distended and very rigid, the rigidity being most marked in the upper left quadrant. There is increased resistance of the left costal arch, the rigidity being most pronounced in its

upper portion near the junction of the eighth and ninth costal cartilages. The abdomen is everywhere tender, especially at a point about three inches above the umbilicus and just to the left of the median line. The abdomen is everywhere tympantic, and there is loss of liver dulness. The patient lies in the dorsal position with the thighs flexed, and any lateral movement of the trunk or extension of the thighs is very painful. The pulse varies from 105 to 120, the temperature ranged around 101° F. The patient's general condition bordered on collapse.

Operation (Gas and Ether).—Median incision, extending upward from the umbilicus a distance of three inches. The opening of the peritoneal cavity permitted the escape of a large amount of gas, which was free from odor. A small amount of serous fluid of neutral reaction was sponged away from the anterior surface of the stomach, which presented in the wound free from adhesions. The depression of the anterior surface of the stomach from the parietal peritoneum in the direction of the pylorus was followed by the escape of an increased amount of fluid of neutral reaction. It was more turbid than that originally observed on opening the peritoneal cavity. The pylorus was, however, free from perforation. Through a small opening in the gastro-colic omentum, the posterior surface of the stomach and the lesser peritoneal cavity were then found to be normal. The stomach was now depressed toward the cardiac extremity, and the escaping fluid became markedly increased in quantity as well as in turbidity, and contained particles of partially digested food, disclosing shortly the presence of a perforation about three inches from the cardia and midway between the greater and lesser curvatures. The adjacent fluid was of distinctly acid reaction. The perforation was about the size of a lead-pencil, and the edges of the orifice were well defined and soft. No induration could be detected in the adjacent stomach-wall. A purse-string suture of chromic gut was taken in the healthy wall of the stomach and the orifice closed. Two Lembert sutures of silk were then inserted over the tightened purse-string suture, and the adjacent peritoneal cavity carefully cleaned. After the insertion of drains down to the pylorus and point of perforation, the remaining portion of the abdominal wound was closed.

Postoperative.—Some nausea and vomiting for twenty-four hours. The pain greatly diminished, and the patient felt very much more comfortable. The evacuation of the free gas in the peritoneal cavity was directly followed by the disappearance of the distention, and the lower half of the abdomen remained flaccid and free from rigidity throughout. The pulse ranged around 120, but was of very much better quality than prior to operation. The temperature remained below 101° F. There was no discharge of stomach contents from the wound, and the patient received increasing quantities of fluid nourishment without pain or discomfort. During the second twenty-four hours the pulse had decreased to 80, and thereafter the progress was very satisfactory. October 12, 1903. Patient's temperature to-day suddenly rose to 103.5° F., the pulse to 120, and in the course of the next forty-eight hours, the physical signs of consolidation of the lower left lobe developed with a serous effusion in the left pleural cavity. This complication ran its regular course, terminating in resolution on the twelfth day. Shortly after, the temperature became normal, and further convalescence was uneventful. At time of discharge the sinus persists, but is superficial, and the patient's general condition is satisfactory.

Case XXIII.—P. G., male, soldier; admitted to Gouverneur Hospital June 15, 1903. Previous history negative. Patient denies ever having had syphilis. On the day of admission to the hospital, patient, who had hitherto always enjoyed excellent health, was seized with paroxysmal pain in the left abdomen. The pain, most intense on the left side, radiated down the left thigh as far as the knee and also to the opposite side of the abdomen. The patient was obliged to cease work immediately and came to the hospital to obtain relief from the pain, a relief afforded only by the hypodermic use of morphine.

Examination on Admission.—There is a large pulsating tumor occupying the left side of the abdomen. The pulsation is synchronous with the heart-beat and of an expansile character. On palpation the tumor has a smooth surface, and by bimanual examination can be distinctly felt to completely fill the entire lumbar region, extending from the crest of the ileum below to the costal arch above. There is rigidity of the left costal arch, most marked in its lower posterior portion. On ausculation, a distinct systolic bruit may be heard over the tumor. There is no disturbance of the circulation in the lower extremities, nor any asymmetry of the posterior tibial pulse. June 21. There has been no change in the size of the tumor since admission. The pain is so intense that willing consent is given for an exploratory operation. This was undertaken in the hope that an aneurism of the renal or other branch of the aorta might be found which then could be removed by ligation and excision.

Operation (Gas and Ether).—The abdomen was opened by an incision along the outer border of the left rectus, extending for an equal distance above and below the umbilicus. The aneurismal sac was in close contact with the parietal peritoneum and had a thin wall. It extended from the spleen above to the iliac fossa below, and involved the aorta from a point just below the diaphragm to within two inches of the bifurcation. The abdominal incision was closed with some difficulty owing to the pressure of the sac against the abdominal wall. For one week the patient experienced great relief from the pain. Then the pain recurred with its former intensity. Three weeks after the operation, rupture of the sac took place through the upper part of the healed incision, and death resulted from hemorrhage.

Remarks.—The cases of surgery of the liver

here reported, constitute a very large group of those cases in which the symptom of costal resistance may be elicited. In those of acute character, such as abscess and inflammation of the gall-bladder, the symptom has been invariably obtained. It has also been obtained in many other cases of cholecystitis, the histories of which are purposely omitted because no confirmation of the pathological condition could be obtained, resolution either taking place or no operation being performed. In many cases of chronic inflammation, especially those associated with cholelithiasis in which the diagnosis was confirmed by an operation done in the interval between attacks, no costal resistance could be obtained, although the wall of the gall-bladder was found in a thickened condition and otherwise showed chronic inflammatory changes.

In neoplasm the symptom is of value only when the liver is materially increased in size as in Case VII; on the other hand, in cases of carcinomatous metastasis no definite change in the degree of costal resistance can usually be elicited, although the mass may not infrequently be palpated below the border of the arch.

Such malignant growths are, however, rarely if ever operable, whereas in abscess and acute cholecystitis, operation is not infrequently imperative. It is precisely in this latter group of cases, in which the presence of increased costal resistance is most constant. It is here often of the greatest value in making a differential diagnosis between acute liver and gall-bladder affections, on the one hand, and acute appendicitis, on the other, especially when the inflammatory process is so intense as to provoke symmetrical contraction of the entire rectus muscle. Under these circumstances the presence of costal resistance almost always excludes appendicitis. It is also desirable to call attention to the fact that, in subacute cholecystitis, manifested by local pain and tenderness with complete absence of all constitutional symptoms, a considerable degree of costal resistance is present.

Any detailed reference to the clinical features of these cases is foreign to this paper. At the same time, Case XV, in which an abscess developed in the left lobe of the liver some three or four weeks after the evacuation of a large abscess in the right lobe; Case XIV, in which typhoid fever was complicated by the formation of multiple abscesses in the right lobe; Case IX, in which acute cholecystitis existed without the presence of calculus, and Case VIII, in cholelithiasis in the quiescent stage in which pressure on the overlying costal arch elicited marked tenderness, are all worthy of special mention. In addition, the extreme variability in the clinical history of the early stages of cholelithiasis not only with reference to the local symptoms but also to the constitutional symptoms as well, should be emphasized.

Only one opportunity has been afforded to observe the behavior of the costal arch in acute pancreatitis. In this case, the presence of increased costal resistance was very pronounced, and indicated more than any other symptom the most advantageous incision for the diagnosis and relief of this most serious lesion. The case to which reference is made is also noteworthy in that prior to the operation as well as for twenty-four hours afterward, the general condition of the patient was most unfavorable to recovery, the radial pulse being nearly imperceptible, and requiring several clyses and infusions.

In cases of pancreatic cyst, the symptom of increased costal resistance occurs only when the cyst is so situated or has reached such dimensions as to lie beneath a segment of the costal arch. In the case here reported, the extraordinary size of the cyst accounted for the unusual prominence of this symptom.

The observation of this symptom in perforation of the stomach is unfortunately limited to one case, although this is one of considerable value in that, notwithstanding general rigidity of the entire abdominal wall, the resistance of the upper portion of the left costal arch was so much greater than the corresponding segment of the right side, that no hesitation was felt in making the incision above the level of the umbilicus. Shortly after another opportunity to test this symptom occurred in the case of a perforating ulcer in the anterior wall of the second part of the duodenum. Here again the entire abdominal wall was rigid, even when the patient was resting under the influence of morphine; the upper portion of the right costal arch, however, presented increased rigidity, and accurately determined the location of the incision.

Those pathological conditions of the kidney in which this symptom can be elicited are those in which the organ is increased in size or in which there is perinephric abscess. The writer has not yet had an opportunity to test the value of this symptom in acute pyelonephritis, a condition in which the size of the kidney, although greatly inflamed and the site of numerous abscesses, may yet be but slightly increased. One would naturally expect, however, to find this symptom in cases of this description.

In all cases of enlargement of the kidney, whether of an inflammatory or neoplastic character, the increased resistance is invariably most pronounced in the lower segment of the arch, and may be elicited with the patient in either the dorsal position or reclining on his side.

In several cases of calculi in the pelvis of the kidney which were removed by the writer during the past eighteen months, no change in the resistance of the lower costal arch has been noted. On the other hand, in two cases of intermittent hydronephrosis associated with movable kidney, the increased costal resistance was very pronounced. Also in one case of malignant growth of the adrenal, which was of large size, and partially cystic, the presence of this symptom was noted, although the character of the resistance was considerably less elastic than usual.

A careful analysis of the cases here reported

establishes the following conclusions: (1) That the symptom of costal resistance may always be elicited in the acute and subacute inflammatory processes of the contiguous underlying organs. In chronic inflammation of these same organs it is present irregularly, either generally, when the organ is increased in size, or during a transitory exacerbation of the chronic inflammatory process. In neoplasms or cysts, increased costal resistance may be obtained only when the tumor has reached a sufficient size to mechanically interfere with the movement of the arch. (2) That the degree of resistance is in direct ratio to the intensity of the inflammatory process. (3) That the increase of costal resistance is most marked in that segment of the costal arch which is closely situated to the original point of infection, or, in the case of neoplasm, to that part of the arch which lies over the most prominent part of the tumor. (4) That its value as a diagnostic symptom is greatest in pathological conditions invading the upper half of the abdominal cavity, especially of the liver, the stomach, the pancreas, the gall-bladder, the spleen, the duodenum, the kidneys, and in extensive aneurism of the abdominal aorta. The writer has had but little opportunity to observe this symptom in supradiaphragmatic processes. In cases of empyema, the abscess-cavity is generally encapsulated and does not usually occupy the lowest part of the thoracic cavity. Only when so situated is there resistance of the costal arch proper. In higher positions, any difference in the rigidity of the overlying rib or ribs is very difficult to detect and unsatisfactory. (5) That the presence of asymmetry in the elastic recoil is very much less frequently observed than asymmetrical increase in the costal resistance, the former being present only in cases of cysts, neoplasms, and inflammatory exudates in which the acute symptoms have subsided, while it is invariably absent in all the acute and subacute inflammatory. (6) That with the subsidence of the inflammatory process whether by radical or palliative procedure, the costal resistance again returns to its normal condition. (7) That the presence of this symptom is very valuable not only in facilitating accurate diagnosis, but also in serving as a useful guide to that incision through which the inflammatory focus may be most rapidly exposed and satisfactorily treated. (8) Finally, that proper and skillful technic in determining the presence or absence of this symptom may be easily acquired, and that, therefore, the application of the symptom may be utilized by the general practitioner and not confined to those engaged in the pursuit of any particular specialty.

Patient with Sutured Heart Leaves Hospital.—Thomas Emerson, the colored man for whom Dr. F. T. Stewart sutured a stabwound of the heart some two months ago, has been discharged from the Jefferson Hospital. For a time it was feared that an attack of pneumonia that began some days after the operation would prove fatal, but the patient fortunately recovered from both the wound and the complication.

A NEW METHOD FOR TRANSILLUMINATION OF THE STOMACH BY MEANS OF FLUORESCENT MEDIA: THE VALUE OF FLUORESCIN WITH A RESEARCH INTO ITS PROPERTIES.

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Drs. Cannon, Morton and others have already called the attention of the profession to the value of the internal administration of a fluorescent medium such as quinine, in order to enhance the action of the X-ray. The present article, however, has nothing in common with the latter. In the course of a series of experiments with transillumination of the stomach, the method of which Einhorn is the originator, I found that the employment of a liquid fluorescent medium, such as quinine bisulphate, gave better results than when plain water was used. In these cases, the patient drinks the fluorescent medium, is conducted into a dark room, and the electric light bulb is inserted into the stomach in the usual way.

For the past four months, demonstrations of the use of fluorescent media for stomach transillumination has been given at my Clinics at the Manhattan State Hospital, West, Ward's Island. During the first demonstrations, bisulphate of quinine solutions were employed, and the method was recently introduced by me, at the Manhattan State Hospital, East, Ward's Island, on the service of Dr. William H. Thomson, for whom I am visiting this institution at the present time. The technic was also described by me at a December meeting of the Post-Graduate Medical Society in this city, and an abstract was given to the *Post-Graduate Medical Journal.* An abstract of my subsequent experiments was given to the *New York and Philadelphia Medical Journal,* but the present article is the first *complete description* of the experiments so far published. My associates, Drs. John E. Traub and C. T. Graham-Rogers, were of invaluable assistance to me, and I am also much indebted to my friend, Prof. Achilles Rose, of the Post-Graduate Medical School. I am further indebted to Drs. Delacroix, R. Haviland and Meager of the hospital staff.

I shall first refer to the media that are suitable for stomach transillumination. I have at hand the names of at least half a dozen other fluorescent media, but they have never been administered internally and no literature is practically obtainable from the manufacturers. Further original investigation will therefore have to be carried out, as regards their properties and toxicity.

FLUORESCENT MEDIA.

1. *Quinine.*—Quinine bisulphate is more soluble and therefore preferable. Dissolve gr. x. quinine bisulphate in a glass of water and add to this ℥ v. acid phosphoric dilute. This seems to increase the fluorescence. Dilute sulphuric acid ℥ v. added to the quinine solution also increases

its efficiency, but the phosphoric acid gives better results. The patient drinks the glass of fluorescent water, follows it with a glass of plain water, and is then conducted into the dark room for examination. In daylight the color of the solution is a faint violet, the reaction acid and the fluorescence slight, as compared with the media now to be described. Transillumination of the stomach with quinine solution, however, gives much better results than with plain water.

2. *Horse-chestnut.—Æsculus hippocastanum. Cortex hippocastani.*—Native of Asia, now grown in Europe. See U. S. Dispensatory, 1900, etc. *Esculin*, a bitter principle obtained from a decoction of the bark. Space precludes a description of the process. The crystals are shining white, prismatic, inodorous, bitter, slightly soluble in cold water, more so in boiling water; soluble in alcohol and in alkaline solutions.

In France the fixed oil extracted by ether, has been administered in rheumatism, as has also a decoction of the bark. A decoction of the leaves has been employed in whooping-cough.

Esculin in gr. xv. doses has been given in malaria. It is therefore *safe* for internal administration. Morton and others have demonstrated its fluorescence with the X-ray. Morton states that an infinitesimal dose in an alkaline solution will fluoresce. One could use therefore gr. ⅛ to gr. ¼ esculin in a pint of alkaline solution (sod. bicarb. gr. xx. to gr. xxx. dissolved in one pint of water) as a fluorescent medium. Esculin, however, is practically impossible to secure at the present time, and Dr. Achilles Rose has suggested a decoction of the *fresh shells* of the horse-chestnut for the purpose of securing a fluorescent medium for transillumination. It is claimed that the American horse-chestnut possesses convulsant properties.

The most marked fluorescent medium with which I have thus far experimented is fluoresceïn (fluorescin).

3. *Fluoresceïn* (*Fluorescin,* Merck & Co. $C_{20}H_{12}O_5$) is manufactured from phtalic anhydride (a naphthalin product) five parts and resorcin seven parts, heated to 200° C. It is a red, or dark red powder soluble in alcohol, giving a yellow-red color and green fluorescence. It colors the cornea green, or rather fissures thereof, and has been employed by oculists to detect corneal ulcers. A solution gr. x. to ℥i of water containing sodium bicarbonate is non-irritant. The above is from the U. S. Dispensatory, 1900. I have so far been unable to obtain any literature, or further description of its properties from the manufacturers. Morton and other X-ray specialists have demonstrated its fluorescence. The above facts, I believe, are all that are known about fluoresceïn (fluorescin).

Therefore, before employing this preparation for internal administration, further investigation of its properties became necessary. The following researches were therefore instituted by me. The experiments with animals were conducted in the laboratory of the Physiological Department of Columbia University. I was assisted by Mr. J. T. Hoyt.

Experiment 1.—One grain of fluoresceïn (fluorescin) was added to 2 c.c. of 95 per cent. alcohol and to this was added 2 c.c. of sterile water. The fluorescin was partly dissolved and partly held in suspension. This was thoroughly shaken up and then injected subcutaneously into a rabbit. No symptoms followed. The animal was carefully observed for fifty minutes—conditions were all normal and at the end of this period the rabbit was as lively as ever.

Experiment 2.—Two grains of fluorescin were added to 12 c.c. alkaline solution. This consisted of sterile water in which grs. three sodium bicarbonate had been dissolved. Part of the fluorescin was dissolved and part was in suspension. The mixture was thoroughly shaken up and injected subcutaneously into a dog weighing about 20 pounds. No symptoms followed. For a short time the animal apparently had some local discomfort from the amount of fluid injected, but this soon disappeared. The dog was carefully watched for forty minutes, and all conditions were perfectly normal. These animals were kept under observation for twenty-four hours and a careful examination was then made. There were no evidences of swelling, or irritation at the seats of hypodermic injection, and the animals appeared normal in every way. During this period there were no symptoms whatsoever.

On the strength of these experiments, I took a small quantity of fluorescin internally—about gr. ¼—without any discomfort. The facts that small animals such as rabbits and dogs experienced no discomfort from hypodermic injections of one to two grams, also that it is non-irritant to the eye, were sufficient evidence of the safety of its internal administration.

In order to obtain the best results with fluorescin for transillumination of the stomach, it was deemed necessary to further investigate its qualities, the proper quantity to employ in order to secure maximum fluorescence and the influence of hydrochloric acid on the medium.

To Mr. F. N. Ferry, the chemist of St. Bartholomew's Clinic, I am indebted for valuable assistance and suggestions in the following experiments. He called my attention to the value of glycerin to increase fluorescence, and together we conducted experiments in the clinic laboratory. (1) Employing from gr. ½ to gr. i of fluorescin in an alkaline solution of sodium bicarbonate; as we increase the strength of the solution, fluorescence diminishes and colorization of the solution begins and increases. Greater strengths than these, color the solution still more, with diminution of fluorescence. Pint solutions were employed in all cases, as this is the average quantity used in transillumination of the stomach. (2) Gr. ⅛ to gr. ¼ fluorescin in a pint of alkaline solution (water containing grs. xx-xxx sod. bicarb.) gives marked fluorescence; is a fairly alkaline reaction; (3) fluorescin is only *slightly soluble* in plain water and gives

a *neutral* reaction with litmus paper, and there is hardly detectable fluorescence with the medium; (4) fluorescin gr. ⅛ with grs. xx-xxx sod. bicarb. in a pint of water plus ʒi glycerin, fluorescence more marked than in (2). Ferry has demonstrated that the addition of glycerin increases fluorescence. If we add another dram of glycerin, fluorescence increases somewhat.

Since the stomach is an acid medium and fluorescence acts best with fluorescin in an alkaline medium, it became necessary to experiment with hydrochloric acid: (*a*) Water one pint in which sod. bicarb. grs. xx, one dram of glycerin and gr. ¼ fluorescin are dissolved; to this add one dram of acid hydrochloric dilute, and fluorescence nearly disappears. On the addition of sod. bicarb. grs. xx fluorescence returns. (*b*) If the original solution contains grs. xl sod. bicarb., and then add one dram of acid hydrochloric dilute, the reaction remains alkaline and fluorescence persists. These experiments further demonstrate the fact that an alkaline medium must first be administered to the patient, and this is to be followed by an alkaline solution of the fluorescin.

Having noted that Hammer, Tracy, Morton and others suggest the administration of radio-active water as a therapeutic agent, and, furthermore, that Morton states that radio-active solutions increase fluorescence, I was the first to suggest to Dr. Morton the *addition* of *radio-active solutions to a fluorescent medium* for the *purpose of transillumination of the stomach.* As soon as a perfectly safe radio-active solution can be secured he has agreed to demonstrate the method at my Ward's Island clinic.

Since Tracy states that radio-activity is well exhibited in normal saline solution, as a preliminary investigation, I tried the effects of normal saline solution with fluorescin. (1) Normal saline solution one pint plus ¼ gr. fluorescin—alkaline reaction, slight fluorescence. (2) To the same solution add grs. xx sod. bicarb. and fluorescence increases; (3) add to this one to two drams of glycerin and it increases more rapidly and markedly; add one dram of acid hydrochloric dilute and fluorescence diminishes somewhat. Then add grs. xx sod. bicarb. and fluorescence increases.

We have, therefore, ready for further experimentation a fluorescent solution suitable for displaying radio-activity. Accurate investigation into the degrees of safety of the latter and not mere theorizing is now necessary, before employment of the radio-active solution. The saline fluorescent medium itself is perfectly safe. Finally further careful experimentation developed the fact that gr. ⅛ of fluorescin to the pint of alkaline solution with a small amount of glycerin, gives the best results.*

Recently at my Tuesday Clinic at the Manhattan State Hospital, West, Ward's Island, the method of transillumination of the stomach with fluorescin was performed on two patients in the presence of Dr. Achilles Rose and other physicians. The results were the most satisfactory that I have ever seen, and I believe that in this we have so far the ideal method of stomach transillumination. Absolutely no disagreeable results in any way followed. It is unnecessary to aspirate out the fluorescent medium, unless the Rose's belt is to be applied, in which event it is preferable, as it is more comfortable for the patient. Two patients have recently been examined at the Manhattan State Hospital, East, Ward's Island, by the same method and with success.

The method is as follows: The patient is given a glass of water (eight ounces) in which xv to xx grs. of sodium bicarb. are dissolved to neutralize stomach acidity. This is then followed by another glass of water (eight ounces) in which are dissolved grs. xv-xx sod. bicarb., one dram of glycerin and gr. ⅛ of fluorescin. The patient is then taken into the dark room and the Lockwood electric light (gastrodiaphane) is introduced like the stomach tube. This instrument is extremely small, gives a brilliant light, and when manipulated in the stomach hardly ever gags the patient. A certain amount of manipulation is necessary in order to determine the lower margin of the stomach at the point of maximum intensity of the light. By pressure on the abdomen and manipulation in forcing the light into the organ for the full length of the carrying tube, the lower border can be accurately located. Moreover, manipulation is at times necessary to determine the relations of the lesser curvature to the diaphragm, a point of differential diagnosis between simple dilated stomach and gastroptosis. With the new method of transillumination with fluorescent media, especially with fluorescin, this is generally unnecessary, and comparing the results with those of water, as formerly employed, I believe the improvement to be marked as well as a scientific advance. The differentiation of tumors of the stomach, liver and intestines is rendered easier, I believe. As far as I have been able to investigate the literature, I cannot find that this method of transillumination of the stomach has been heretofore employed.

Before concluding, there are other qualities of fluorescin which I should mention: (1) The fluorescence of the prepared medium increases, the longer the exposure to light; hence it is advantageous to prepare the solution half an hour or more before use, though this is not necessary; (2) the powder is so extremely light, that powders of gr. ¼ can readily be made up and these easily subdivided into gr. ⅛ at time of use; (3) the fluorescent medium leaves a slight yellow-red stain on the hands which can be readily removed.

In conclusion, let me say that there are certain interesting problems that suggest themselves to us from this work: (*a*) The use of a radio-active solution in the fluorescent medium for stomach transillumination; since Morton demonstrates

* By recent experiments I find that lime water ʒij may be administered in each glass of water, as a substitute for the soda bicarbonate. Laparotomy on a case of gastroptosis transilluminated with fluorescin at the West Hospital, has recently demonstrated the absolute accuracy of the method.

that a radio-active solution increases fluorescence; (*b*) the radio-active solution in the fluorescent medium might itself give us a picture of the stomach in the dark room, by use of the fluoroscope alone. (*c*) The possibilities of thus photographing the stomach either with or without the accessory of the X-ray apparatus, by using the radio-active solution with fluorescence internally.* Fluorescin, as I have demonstrated, combines well with a normal saline and soda solution. (*d*) The possible value of the non-irritant fluorescin solution in the bladder, for the purpose of improving the scope of cystoscopy and an investigation as to whether such a solution would enable us to detect minute ulcers, or fissures in the bladder, just as in the cornea.

Whether fluorescin has been given for therapeutic purpose, I cannot state positively, though so far I have been unable to find any record of the same, nor had its manufacturers any record of its internal administration, as I have heretofore stated. I trust, however, that these researches and suggestions may prove to be of some value to the profession.

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THE SCOPE OF PHYSICAL ECONOMICS: AN INQUIRY INTO THE POSSIBILITIES OF ENHANCING HUMAN EFFICIENCY THROUGH PHYSICAL EDUCATION.†

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The term physical economics, as used here, is intended to embrace the principles through which are to be acquired normal motor energizing, also functional balance, and are essential to bodily and mental well-being. It is an axiom that complete mental energizing is conditional upon adequate physical functionation. The term adequate is used because perfect functionation is not always to be expected, but enough is an elemental requirement. One or other item, or degree, may be lacking, but the norm for the individual must be attained, or maintained in order to preserve intellectual equipoise and practical efficiency. It is a rule, accepted on all sides, that mental balance can only be preserved through a persistent attitude of deliberate watchful control of all the powers. Enough, perhaps, has been said to emphasize the paramount importance of "equanimitas," the serene intellectual attitude most needed in all human effort. Those who have recognized this truth have numbered among themselves the great ones of the earth since the dawn of history.

There have been times, protracted periods, when little attention has been shown in that even greater theme, greater because a primordial necessity, of bodily equipoise through which alone the superior intellectual processes can thrive.

The teachings of physicians deal over largely with the mitigation of ailments, derangements and diseases. Preventive measures have never, not even now, attained the recognition they deserve. To conserve and amplify bodily forces is a pursuit justifying the best attention of all physicians but fails to receive its desert. The church has persistently magnified the Spirit at the expense of the body in all ages; and left an indellible mark, especially on the history of the Middle Ages. Yet a clean body, free from grossness, is needed for a pure spirit. Mere Animal vigor is not what is occupying our attention here. Meanwhile the growth of a movement to place a just appreciation on bodily conformation and well sustained vigor is assuming large and praiseworthy proportions. This movement is healthy and to be encouraged but is, as yet, a mere revolt at worse conditions or restrictions and requires careful guidance. It is worthy of the best attention, the most unremitting study of scientific and benevolent men, who are the only suitable teachers and guides. The awakening of interest in acquiring bodily perfections has begun chiefly among those who are moved more by the stirrings of primordial physical instincts, of mimic war or sports imitative of human struggles, hampered by human passions and appetites, than from a wholesome appreciation of the largest ultimate good. Hence we see vast multitudes sit spellbound at exhibitions of warlike contests on athletic fields, on water sports, on pageants reflecting war or the chase, or even at prize fights, than can possibly be collected, or held, by the exhibitions of artistic, scientific or intellectual men, their preachings, or products.

Hence in the growth of that interest now so widespread in the betterment of individual vigor the movement is reflected chiefly from the athlete and the professional competitor.

The teachers and (*mirabile dictu*) the writers on physical culture, are composed largely of those who have gained fame as wrestlers, prize fighters, track athletes, fencing masters, and professional trainers or teachers of such matters in the army, drill sergeants, and in colleges, performers on the stage and the like. We can learn much from these men; they furnish a sound, practical basis of principles upon which success has been gained and laurels won in many departments; many of these are well worthy of imitation, it is true, but they often make statements requiring the most careful revision by the educated physician. Just here is pertinent to remark a curious fact, that although the semiprofessional teachers in colleges, the coaches of the baseball and football teams, the track athletes, the oarsman, etc., are often graduates not only of the colleges, but also of the medical schools, they have as yet added little to the literature of physical economics. They are the men who

* By further investigation, I have not been able, so far, to arrive at a positive conclusion that the addition of a radio-active solution to a fluorescent medium at all increases the intensity of the light in transillumination of the stomach. Dr. Sinclair Tousey has photographed for me the stomach of a rabbit filled with radio-active solution combined with fluorescent quinine solution; Medical Association of the Greater New York, March 14, 1904.

† Address delivered before the Association for the Advancement of Physical Education, at New York, Jan. 16, 1904.

ought to act as guides to youth. So far they have done nothing commensurate with their opportunities.

Fortunately, the subject is becoming amplified by the formation of associations composed of those who undertake the scientific pursuit of physical advancement or who have ranged themselves in the rank of lovers of the ideal man or woman, and from their individual and joint efforts and the frank discussion of expressed opinions much true progress may be expected. For them the watchword must ever be high ideals and critical investigation.

The best work can be done by those who have had a thorough medical education, or at least a full knowledge of anatomy, physiology and anthropology. In the absence of such groundwork false conclusions are likely to be reached; errors various and disconcerting will be made. Certain individuals of my acquaintance, non-medical, have taught me a great deal of value; many special "courses" have I taken, hoping greatly but rarely learning much. Occasionally the light is flashed here and there on new realms of thought. We are still on the threshold and must win our way by honest individual and mutual self searchings.

Let me offer a few thoughts on those salient, or rather fundamental, principles, which seem to constitute the objective points of our search. A wise friend, not long since, in a discussion of things grave, expressed his surprise that the one distinguishing quality or attribute of Christ had, so far as his researches taught him, been overlooked. This is poise, which may be described as the maintenance of a justly proportionate energizing of all vital forces of body, mind and Spirit.*

The divinity of Christ was enshrined in a human organism of perfect proportions and powers. We need no better proof of this assumption than is afforded by the description of His life and human acts as recorded in the Gospels.

The material part of Him could obviously sustain no improvement. No one can read the Gospels, as a believer or skeptic, and fail to note his splendid symmetry, reserve power, coordination of mind and body; in short, his perfect poise.

So it is that man, in whose image he is clothed, can do no less than strive to acquire so much of similar perfectness as his individual endowments enable him to attain. The word, then, which more nearly describes the physical and mental completeness of the perfect man, is poise. It should be our aim to secure this attribute for those in our keeping. By this standard alone we measure fullest human efficiency.

In estimating the factors which make success, and providing standards, let us leave out always the extreme types of superiority, the product of reprehensible specialization such as the triumphant financier or champion prize-fighter.

It is our prerogative to equip the individuals in our keeping with the highest vital dynamics. To do so, it is imperative to assume an ideal toward which always to strive. This ideal should be understood and defined as fully as possible. The qualities we desire to confer should be formulated accurately in our own minds. In our solution of the individual problem full consideration must be given to age (actual or relative), sex, antecedent history, vital resistance, constitutional or acquired weakness or damage, social or racial habits, and, above all, a study of temperament.

We are called upon, perhaps, more often to improve the bodily condition of those who are of fairly good constitution and relatively young, but full grown. The very young are, or should be, under school trainers who need all the wisdom possible, as theirs is the opportunity of molding during the period of plasticity.

Our first consideration should always be to search out the acquired faults of posture, limitations in range of movement, the coordination disabilities, to note short comings in symmetry, in hypertension or overrelaxation and all developmental defects. We should always define the equation between the force and accuracy of voluntary and involuntary acts, and determine whether less or more are required to accomplish desired results. Some people, indeed, the majority, fall early into habits of inaction, involving if not the whole, then some considerable part of the body, through which a large train of degenerative phenomena arise in certain tissues; others, and many under emotional strains, exhibit a prodigality of action most wasteful of nerve force and are thus constantly on the verge of exhaustion. The value of the exercise of economy in vital forces is fully appreciated by drivers of draught animals, by athletes, and the employers of labor in all fields.

Some men and women who assume heavy responsibilities are fully alive to this elemental economic principle also for themselves; but, alas, too many do not appreciate the individual application. In proportion as they learn this truth, and act upon it conscientiously, they become and remain efficient.

What profits it if one shall become a great power for accomplishment, in some special direction, if he lose health or capacity for sustained effort? This problem of the relationship of work to the capacity for effort and its corollary nerve tire, is of deep importance and my teachings in this line are on record. My thesis is the scope of physical economics and the central thought of mental and physical poise must never be lost sight of in aiming at consummate fitness. In acquiring poise the perfect adjustment of effort in any direction to result or product we must first consider early development, next, middle age development, and finally, the reacquirement of so much of our latent capacities as is possible, consistent with the age reached and the disabilities already accrued. Herbert Spencer makes the assertion that the marvelous motor and sensory acumen of the Indian hunter, trained from childhood in observation, in patience, in niceties of physical and mental adjustment, required by a

* This observation is confirmed by several learned clergymen.

struggle for existence in a primitive state of society, can never be paralleled by any imitation. All this is true, but it is also true that higher intelligences, as found among Circassians, are capable of special training and adaptation which can, and do, equal the physical powers of the Indian in most particulars and excel in some.

A thorough education of the central nervous system, the foundation of sensory and motor training especially during the period of plasticity, is an absolute essential to the attainment of even relative perfection in any line.*

It must not be overlooked, however, that immense advantages follow efforts to develop dormant powers late in life. The whole progress of ageing is one of development. Only toward the end of a long life in one structurally sound can the phenomena of decadence be said to arise, and even then the tissues are capable of much wholesome modification. Old people are susceptible of decided physical improvement by systematic attention. It has frequently happened in my experience that an elderly person seeks advice for obtrusive evidences of weakening which brings to notice the fact that, while pursuing life's work, specializing possibly in intellectual directions, no commensurate care was taken to maintain the body in proper standards of excellence. Providence is trusted contentedly to continue his gifts of physical health. Meanwhile no effort may have been spared by the individual to bring the mental powers to the highest plane of efficiency. Under the age of seventy years, it is usually possible to find a virgin field for improvement. After that period much can still be accomplished. Often in those who distinctly evince a diminution of vigor not only can extraordinary rejuvenation of physical powers be enjoyed, but, as the structures regain lost or previously developed tone, the blood and lymph being purified and oxygenated by stretching movements, many cells long suffocated become alert, and a new order of things arises in mind and heart. The stream of life flows more clearly, more cheerily, no longer the muddy current, the offensive stagnant pools. All nature takes on new colors, new shapes, and, above all, new hopes and capacities for enjoyment awakened.†

Again, let us consider those persons who have suffered some grave organic damage of lung, kidney, heart, digestive organs, nerves and the like. The time was, not so far away, when for these the fiat went forth that such sufferers must content themselves to be set apart, to live a life limited to fewest activities.‡

In all these and many more conditions of seemingly irrecoverable organic disability, it must be remembered that the best form of movement cure is that which is made by the physician pulling and rotating. This much-neglected passive education, even in those capable of much activity, admirably furnishes training for the joints which are thus reset and remobilized, venous and lymph stases are relieved and great comfort is afforded to many forms of disability, large and small. The physician should begin, and himself apply much of the passive movements in many instances. There is still an ample field for the skilled masseur.

The scope of physical economics can scarcely be bounded. Thoughtful men, medical and lay, will develop the theme increasingly, each according to his taste, capacities and originality. Certain definite principles must govern. It appears to me a few objects and standards of excellence should be formulated. The primary aim should be to acquire right posture. There may be differing opinions as to what this is, but a suitable model is a youth, or a maiden, of about ten or fifteen years, untrammeled by costume or occupation deformities, and the product of freest opportunities for physical activities, where the stimulus of most varied effort is duly modified by the overcoming of difficulties.

Again, whenever contractures, due mainly to hyperconsciousness or asymmetrical tensions, confining occupations or disease have marred the organism these must be corrected and removed. A point which impresses me as of vital importance in the performance of all regulated movements, is deliberation and accuracy, with intervals of complete relaxation. Rapidity is sometimes called for, of course, but rarely, and should always be subordinated to nicety and precision. Action, to fulfil these requirements must be by an organization whose parts, both the central and peripheral, are in normal adjustment. Whenever it seems to be otherwise, the inevitable conclusion follows that with improvement in adjustment an amplification of efficiency will follow. Again, in the performance of evolutions, single and complex, the best single principle of action is the parabolic increment of intensity from lightest poise to fullest tension, such as the exquisite elaborate action of the fencer's thrust. A very brief period of exercise daily, augmenting extensor action for the arms and flexor action for the legs; repeating accurate movements, normal in direction always, but of the widest variety, each act as a geometric increment from poise to complete contraction, will do more to regain symmetric tone and educate motor centers, in brain as well as muscles, than hours spent in dawdling field sports.*

For the remedying of a vast array of disabili-

* This topic has been ably treated by Prof. Halleck, of Yale, in a small book which is not too elementary for anyone to read with advantage.

† See paper by this author: "Conservation of Energy in those of Advancing Years," in the Popular Science Monthly, Feb., March and April, 1904.

‡ The author read a paper at Washington on the treatment of chronic heart disease in children by regulated movements. In the discussion little encouragement was meted to his views. One of New York's most distinguished masters in medicine declared such opinions dangerous or worse, yet, some before and many since, have advocated carefully supervised activities for those of damaged hearts. Some risks may possibly be run, not grave ones; but consider on the other hand the deprivation of rational pleasures thus imposed; the rapid degenerative changes following in all organs, if the blood stream is not encouraged to become freshened by natural outlets of energy. The author's earlier days were spent in the office of the greatest neurologist of America, a man who is wiser than his colleagues in recognizing the efficacy of passive and active movements, yet for years the opinion prevailed even with him, that locomotor ataxia should be treated by almost absolute rest. Now Fraenkel and others have specified certain active exercises for this disorder as necessary to recovery of health.

* No disparagement is intended of the utmost utility of field sports

ties, large or small, in old or young, in brain workers or in laborers exhausted by monotonous physical toil, no agency is capable of affording so much relief as a scientific application of the broad principles of physical economics.*

Many of those who consult the physician describe themselves as fairly well but easily fatigued by slight exertion; in fact, while far from strong, they are free from definite organic disease. The custom is to treat such folks by rest, extra care as to exertion or exposure, tonics and forced feeding. A large proportion of these disappoint both us and themselves, remaining below par indefinitely after having exhausted the resources of more than one excellent medical adviser. Even when certain organs are deranged, or convalescing from acute disease, many of these people will recover entirely and promptly, provided the motor activities are called into use in such a fashion as shall encourage a return of full circulatory balance, not only in tissues and organs disturbed, but also by restoring the normal circulation in these segments of the cord whence they are innervated.

In short, scientific medicine, working with all its resources at command, often reaches the limit of progress toward health. Then, if we have recourse to the possibilities of what may be termed physical economics, large, timely, and often unexpected gains can be made. Practical physical economics may be described as a scientific study of the normal bodily movements in direction and force and employed in such a fashion as shall best supply the needs of the organism, holding in careful consideration the disabilities present, using only those measures and so much of them as shall be admissible, and increasing them wisely in force, repetition, frequency and breadth as shall secure the desired results.

This work cannot be delegated by the physician to any other person; he should be the one to determine the manner, and amount of such activities based upon his knowledge, first, of the natural history of disease, and second, of the possibilities of tissue activities, normal relationships and coordination, and third, a careful estimate of the defects in original development of the patient and the acquired deformities. When the problem has been outlined from adequate knowledge of both suitable standards, and a formulation of the special needs and possibilities of the case, it will be found that not only can results be secured far in advance of the ordinary methods employed, but that the scientific resources of the physician are by this taxed quite as fully. The reason why physical readjustments and restoration by passive and active manipulations, and reeducation in normal activities are held in such small esteem by the profession is plain. The fact is, that few physicians know anything about the matter and are disinclined to learn, contenting themselves in covering up their ignorance by belittling the value of the subject. Their interest may have at one time been aroused in allied subjects, or if still extant, usually takes the form of mere amusement in certain forms of athletic games or sports. In these they acquire a superficial familiarity, but rarely give their attention to those fundamental laws of the motor activities which would fit them to act as guides or experts. They do not understand what the body is capable of, hence they cannot know how to restore its powers. A few are aware that something of value can thus be accomplished, but, conscious of their shortcomings, employ one sort or another of physical trainer through whom probably more good is obtained than harm wrought, but it is a slipshod method at best. Even the orthopedic surgeons, to whom problems of advanced deformity are sent, rarely realize the fundamental problems submitted and content themselves with routine procedures applied by hirelings, not medical experts, and the use of supports and corrective apparatus, the cutting of tendons and other operative measures.

By far the larger number of those for whom corrective exercises are needed either go without or seek on their own recognizance various self-styled physical culture experts and thus often secure much betterment but oftentimes some harm, and rarely get what they actually need. If one will reflect a moment and take a broad view of the subject of physical efficiency it will be patent that we are now in a transition stage which must be followed by a fuller realization of the gravity of the problems involved. It is possible to demonstrate the fact that the scope of physical economics is vast and of vital importance, but practitioners of medicine have been curiously indifferent.

A consequence of this is that the public fails to regard medical practitioners as authoritative in a broad field of influence and, becoming aware of its needs, seeks advice at the hands of bold claimants who strive to justify their assertion that by regulated exercises and manipulations an enormous array of discomforts and disabilities, both minor and major, are relieved or cured. Thus is medical potential lowered, respect for the resources of medical art is lessened, and much harm done to the esteem which should be our prerogative. If the profession generally cannot, or will not, realize the gravity of this position and study this clearly definable branch of therapeusis, at least they could encourage a few to make it a specialty and give them the cooperation extended to the well-recognized forms of specialization and accord them the same trustful mutual interchange of courtesies. If not, then much work which could, and should, be done by skilled physicians will drift off to irregular practitioners who are not slow to sneer at our limitations.*

as occupying time and supplying motor coordination, air and sunshine; but form is here required to get the best personal results.

* Not the least utility of the teachings of physical economics, is that which accrues to the teacher. Attention along wholesome lines is retroactive and makes for his or her betterment. It seems to me the plain duty of the experts, is to embody in themselves the principles taught. His or her person should stand as an example of complete poise and be made to improve steadily as time progresses, and serve as a constant evidence of the conservation of values.

* See article by the author, "Remarks on Mechano-Therapy, Bone Setting and Osteopathy," New York and Philadelphia Medical Journal, Dec. 16, 1903.

Let me make a few remarks which will serve as the equivalent of case citations and then proceed to offer a few fundamental principles of physical economics.

It would seem that among children few instances occur requiring systematic readjustments, unless from the effect of congenital or profoundly disabling disease, yet my experience for many years has led me to recognize and correct many minor disabilities and to train these folk into efficient individuals. Small defects, arising during the plastic years, readily grow into larger ones and are only too rarely "outgrown" spontaneously. It is my pleasure to feel I have deflected much material from future orthopedic clinics by correcting deformities in their incipiency. By this means also organic maldevelopments are saved, especially of the lungs and heart which are dependent for full capability upon a roomy elastic thorax. Many organs are subject to mechanical disabilities in the abdominal cavity where a brace in time may spare many ptoses. These ptoses, relaxations and displacements of the abdominal organs are now recognized to be both numerous and significant. Most of these are distinctly more preventable than curable. The prevention is easy by conferring normal tonicity upon the supporting tissues, and the fundamental requisite is symmetric central vigor and elasticity of the skeletal structures. Again, a vital requisite is full lung competence; in feeble children or others unable to take adequate exercise the lungs fail of full expansibility. By breathing exercises and by developing the elasticity of the thorax, arms and shoulders great gains can be made and the capacity of oxygenation amplified. Again, for a long time I have treated many organic troubles in children, even those of the heart, by regulated movements as stated before, by which compensation is much earlier obtained. By passive followed by gentle active movements much discomfort is saved to the cardiac sufferer, passive congestion relieved, organs and muscles brought to a higher state of efficiency, and the joy of vegetative existence increased. Often fuller activities are made possible. In short, the poor disabled creature is invited to become a part of the scheme of life, not a mere incubus or excrescence on the body politic.

No effort can be economically expended without the compensatory action of relaxation, by periods of complete rest, or cessation of voluntary action. These intervals of rest to be effective must be as nearly absolute as possible, and of much longer duration than the time occupied by tensions.

It is a prerequisite condition of motor efficiency to acquire full power of complete relaxation, and must be the first qualification striven for. This accomplishment, once acquired, will fit one to immeasurably save nervous force for expenditure in specific directions and to secure the largest results.

If tension be maintained for a moment longer than is needed the reserves of energy are being squandered. This prodigality of energizing may be expended consciously, but far more frequently without being recognized. In most of us, especially those who are overenergetic, high strung, intense, it is an unconscious attitude, a bad habit which should be sedulously overcome. Among the weak and neurasthenic it degenerates into fidgetiness. Those enviable beings who possess a placid, calm disposition, an imperturbable temper, are always in a position of advantage over others whose reaction time is excessive.

However, it is entirely possible for all of us to imitate them and acquire some degree of this control over our ebullient forces. In proportion as we learn to relax, do we save not only our physical reserves, but improve our accomplishments.

The attitude of physical relaxation is the starting point for all effort. Again, the consequences of overtension result in rigidities and contractures. They are to be found in nearly every human being, old or young, beyond early childhood. The causes are chiefly hyperconsciousness, but others are old toxic irritations, as of gout, fibrositis, rheumatism, the infections, and any irritant reacting on the centers of nervous force.

These tensions, and the resultant contractures, are hurtful for several reasons. They cause continued pressure upon delicate structures such as nerves, blood vessels, and lymph channels by muscle masses and other structures which have become rigid. Cellular interchanges are thus impaired; organs of special sense, as the eye, the ear, and the structures of the throat and nose, all thus frequently suffer structural damage or functional impairment. It is common to find in one who suffers impaired functional competence of one of these organs as of the heart or circulation of the brain, such as headache, vertigo, confusion, insomnia and the like, abundant evidence of rigidity in the tissues of the neck and extrascapular tissues. When the rigidities are removed it frequently happens that these disabilities are often entirely removed. Scores of cases could be cited where the sufferer had employed the best specialists and been for years under the care of leading neurologists—still unrelieved.

The objects to be obtained are plain; these are to acquire elasticity of these hardened tissues, and a capacity to relax. To do so involves careful teaching by one who appreciates the situation and has a practical knowledge of the normal states and capacities of muscles and ligaments. It is accomplished chiefly by passive movements and manipulations and partly by judiciously directed active movements.

To acquire normal attitudes it is absolutely essential that symmetrical elasticity of the tissues be first secured.

Relaxation being gained, or fully appreciated, the principles of physical economics may be outlined as follows:

1. *To acquire normal attitudes.*—Few persons are free from local or general faults of posture and most have acquired deformities.

2. *To overcome contractures.*—It is rare to find one who possesses perfect mobility of limbs, or neck, or other frequently used voluntary muscles, and it is exceedingly common to find the less used joints grievously stiff and contracted, especially the hip-joint and the junctures of the ribs, the origin and insertion of many muscles, deep-seated tendons and ligaments.

3. *To attain full flexibility of the muscles by which alone their competence is established.*—Here relaxation is an imperative condition. Also steady stretching is most effective, protracted till the tensions are overcome, or taught to overcome themselves.

4. *To acquire accuracy in movements.*—Along with deliberation graduated increments of force should be employed, particularly in extensions, which should be from full relaxation in a parabolic curve of force to the perpendicular of extreme tension. This is the chief index of power and on this basis alone is economy of forces to be estimated and conserved. After accuracy is attained speed may follow and then be of some utility. It is desirable also to secure:

5. Full capacity for extension, first passive, and later active, by which the tendons are stretched to their uttermost and through this much improvement is possible, not only in the efficiency of the muscles but also reflexly in the nutrition of the centers, is enhanced.

6. Full respiratory capacity; the basis of oxygenation in lungs as well as muscles. This may be acquired by systematic breathing, rhythmic inspiration and expiration, both increasingly, until by securing invigoration of the thoracic tissues, supplemented by the abdominal muscles and especially the diaphragm, not only is full forced inspiration accomplished, but, of equal importance, fullest expiratory emptying of the lungs. This should expel the last possible remaining complemental air from the recesses of the lungs and greatly enhance the interchange from the residual air.

7. Circulatory capacity, the heart and great veins need development; a long story and attainable through automatic movements repeated to the limit, or by movements of skill, training, balance, accuracy, variety, etc.

8. Capacity for muscular endurance, by repetition of automatic simple acts or variegated movements, such as in fencing, the various games of skill, tennis, squash, handball, etc.

9. Muscle building; of little or no use to those not young or fairly vigorous, but of great importance to those who are markedly weak at any age, provided there is no contraindication.

10. A combination of muscle-building accuracy, endurance, full muscular competence of limbs and heart from such means as fencing, wrestling, boxing, or other dual contests.

It is usually sufficient for any one who desires to pursue physical economics for the purpose of acquiring full bodily efficiency, short of competitive athletics, to work mainly for elasticity and accurate tensions.

MEDICAL PROGRESS.

MEDICINE.

Mathematics of the Diabetic Diet.—That in most cases it is unnecessary and superfluous to entirely withdraw the carbohydrates from the diet of diabetic patients, is the claim made by A. C. Croftan (Jour. Am. Med. Ass'n, March 26, 1904). It is almost impossible to adequately nourish these patients unless the carbohydrate is replaced, bulk by bulk, by other food equivalents. The complete withdrawal moreover of the carbohydrates eminently favors the development of acidosis and precipitates the inevitable consequence of the latter, —diabetic coma. The author claims that mathematical accuracy should govern the regulation of the food of these patients. A normal adult requires from 30 to 35 calories a day per kilo of body-weight and if this caloric value is not supplied, the body must consume its own tissues and suffer accordingly. Where there is a loss of sugar in the urine the average diet will not furnish the required caloric value. By knowing the daily amount of sugar excreted, it is possible to estimate what proportion of the deficit is made good from the patient's tissues and the diet regulated. It is necessary in each case to determine the tolerance to carbohydrates. Occasionally the sugar is due to too much sugar in the food, but generally to insufficient power in the organism to destroy the normal amount. There are three degrees of glycosuria. One may speak of the mild form, if the sugar excretion stops at once after the withdrawal of the carbohydrates, if it does not reappear when small amounts of the carbohydrates are again administered and if at no time the amount of food albumin need be reduced. In the medium form not only must the carbohydrates be withdrawn completely before sugar excretion ceases, but the food albumin must also be reduced to such a point that less than 18 grams, but more than 10 grams of nitrogen appear in the urine. In the severe form, in order to stop the glycosuria, the carbohydrates must be stopped, and in addition so much albumin must be withdrawn, that less than 10 grams of nitrogen appear in the urine. The diet ordered must therefore maintain the nitrogen equilibrium; *i.e.*, the nitrogen output must never exceed the nitrogen intake. The patient therefore must receive food that, after the deduction of the sugar wasted in the urine, allows him to utilize at least 35 calories per kilo of body-weight pro die. The author considers however that in certain cases it may be well to give a certain amount of carbohydrates even though the sugar does not entirely disappear, viz., (1) the impossibility of adequately nourishing most patients on a meat fat diet alone, and (2) the increased danger of acidosis and coma incident upon the entire withdrawal of carbohydrates. It is advocated that the diabetic be treated for a time at least in some institution where the case may be studied as outlined above, and the author also decries the method so widely adopted of handing every patient with sugar in his urine, a diet list on which is to be found a list of articles that contain no carbohydrates.

Diagnosis of Pulmonary Insufficiency.—If the examination of a heart case is begun with auscultation, pulmonary insufficiency will often be mistaken for aortic regurgitation since the maximum murmur of the latter is often situated over the pulmonic area. E. Fromherz (Münch. med. Woch., March 8, 1904) auscultates last of all and thus avoids the common error. The absence of the typical appearance, with the peculiar pulse, the retinal pulse and the downward enlargement of the heart so common in aortic disease will make a pulmonary insufficiency very probable, even if auscultation detects a murmur characteristic for the former. In addition, the

right ventricle is considerably hypertrophied. When complicated with stenosis, the second pulmonic sound is weak or absent and the patients are very cyanotic; the prognosis here is very grave. In persistent ductus Botalli the heart is also enlarged to the right and a systolic murmur is also heard over the second or third left interspace, but this murmur occupies only the second part of the systole. It is well demarkated from the second, accentuated sound and as a rule the first sound can also be heard; sometimes the second sound is accompanied by an inconstant murmur. No difficulty is usually experienced in differentiating from pericarditis or from extracardial murmurs such as occur with typhoid, rheumatism and chlorosis. In severe cases of mitral stenosis, a relative pulmonic insufficiency may occur and very rarely both aortic and pulmonary valves are diseased.

Typhoid Bacilli in Urine and Feces during Convalescence.—The occurrence of virulent typhoid germs in the urine and feces of convalescents from typhoid is of the greatest importance in the prophylaxis of the disease. According to D. HERBERT (Münch. med. Woch., March 15, 1904) the urine is a greater source of danger than the feces, since bacilli were found in 18 per cent. of the former and in only 3 per cent. of the latter. The last positive cultures were obtained in from eight to twenty-seven days after the cessation of the fever, the average being fifteen days. With one single exception the excreta were harmless during the second month of the disease. The technic is very simple: a small amount of the fresh urine or stool is simply plated on the special medium of Conradi and all suspicious blue, glassy colonies are tested for motility and agglutination. The appearance of the colonies alone will often warrant a diagnosis.

Influence of Hydrochloric Acid on Pepsin in Stomach.—If a dilute solution of hydrochloric acid is introduced into the stomach, a large amount of the fluid, still of high acidity can be expressed after one-half to three-quarters of an hour while the same amount of water without acid will have disappeared in this time. According to A. HEICHELHEIM and M. KRÄMER (Münch. med. Woch., Feb. 23, 1904) the acid has a pylorospastic action which is most marked in hyperacidity and absent altogether in achylia when the contents of the stomach are very rapidly emptied unless stenosis or atony is present. In carcinoma of the stomach with absence of free hydrochloric acid a small amount of pepsin could always be detected after a simple test-meal, but a larger amount was always found if hydrochloric acid was first given, as this converted the pro-ferments into ferments. The same was also observed in achylia without carcinoma but to a much less degree and in a few cases with complete absence of pepsin, the acid had no effect. In normal cases the amount of pepsin was generally diminished if the test-meal was preceded by acid since this brought about an extraction of the gastric mucous membrane. In some cases of cancer, the expressed acid contained blood where previous test-meals had always been free; since this was never observed in simple achylia, it may help to a diagnosis where a palpable tumor is not present.

Typhoid Agglutination in Jaundice.—The fact that the blood of jaundiced patients will occasionally agglutinate typhoid bacilli, has considerably diminished the value of the Widal test. Though many such observations are on record, a true explanation of the phenomenon has not yet been given. Taurocholic acid seems to be the only constituent of bile which occasionally causes clumping but negative results are obtained with the blood-serum of patients treated with this substance. In the following cases M. STEINBERG (Münch. med. Woch., March 15, 1904) found agglutination in a dilution higher than 1-40: six of catarrhal jaundice, two of cholelithiasis, four of tumor, one of acute yellow atrophy, one of sepsis and one of febrile icterus; very high values were, however, obtained only where the patients had had typhoid some years ago. It is most likely that the jaundice itself is not responsible for the agglutination but the bacterial infection which exists in most cases of icterus. Typhoid bacilli are not only agglutinated by typhoid serum but also by the serum of patients differing from paratyphoid, colon, proteus and even staphylococcus infection. It certainly seems more plausible to accept this as explanation than to assume that disturbance of hepatic function so alters the blood-serum that it assumes agglutinating properties.

Urine in Lead Poisoning.—In a large number of cases of chronic intoxication with lead K. KLIENEBERGER (Münch. med. Woch., Feb. 23, 1904) invariably found elements pointing to a nephritis. The frequent presence of granular renal epithelium and typical granular casts with only few leucocytes and red cells seems to be characteristic for the acute phases of chronic saturnism so that a parenchymatous nephritis must be assumed. This nephritis has no tendency to disappear spontaneously since it depends upon severe lesions of the renal cells.

Causes and Treatment of Chronic Rheumatism.—Acute rheumatism is considered by many to be an infectious disease. There is no particular reason why it should be mentioned in the same breath with a very different disorder, chronic rheumatism. RALPH STOCKMAN (Brit. Med. Jour., Feb. 27, 1904) states that the term "rheumatic," while still not by any means satisfactorily defined, has gradually become much narrowed from the efforts of many observers to make more accurate diagnoses. Morbus coxæ, cóxa vara, Hogarth's nodosities, septic and gonorrheal arthritis are now happily recognized to be separate and distinct from each other and from chronic rheumatism. It is now generally held that chronic rheumatism implicates only the ligaments of the joints and more especially all the fibrous tissues of the muscles and bones. There is still an unfortunate indecision in the matter of its pathology. The essential pathological changes are confined to the white fibrous tissue. Hence the lesion affects the aponeuroses tendons, fibrous septa, sheaths of various structures and the fibrous parts of joints. Microscopically the lesion is seen to consist of a proliferation of fibrous tissue. The part is hyperemic but free from leucocyte engorgement. Frequently this thickening takes the form of a strand or cord running through the part. Sometimes the condition is either duplicated or else closely simulated by the lesion which arises after local injury from strains and sprains. To obtain perfect cure from the recurrent attacks, the fibrous indurations must be disposed of, and in all except the most recent cases, this is a decidedly difficult procedure. Massage and exercise, faradism and the injection of a solution of chromic acid, the latter being applicable only where the areas are sufficiently large, have been found to be most satisfactory. General massage is of no use. The knuckles and fists should be used for rubbing locally. As much as a year may be consumed in disposing of long-standing nodosities. Ten minims or less of a one-per-cent. solution of chromic acid in water may be injected. It may cause pain, but if suitably done, it will ultimately give great relief. There is often occasion to excise the nodes by the knife, and no hesitation should be felt in having recourse to this easy and sensible method.

After-history of Gastric Ulcer.—Seen from a medical or a surgical standpoint, the deductions from histories of these cases are of the utmost importance.

James W. Russell (Lancet, Jan. 30, 1904), who has had a large number of chronic out-patient ulcers under his care for a large number of years, states that as a result of purely medical treatment, his conclusions are as follows: Direct mortality 2.1 per cent., 4.3 per cent. have died from intercurrent disorders, 42.6 per cent. have recovered, 27.7 per cent. having had but a single attack, 14.9 per cent. having recovered after one or more relapses, 44.7 per cent. represented a group in which all the individuals were suffering from stomach symptoms of more or less severity, 14.9 per cent. had very positive attacks with intervals of immunity which apparently resulted directly from the treatment, 29.8 per cent., despite all that could be done, suffered almost continuously from pain. These cases appear to the author to represent those in whom surgical intervention is very clearly indicated.

SURGERY.

Obstruction and Distention as the Cause of Appendicitis.—As the result of experiments on dogs and from the study of cases in man, C. Van Zwalenburg (Jour. Am. Med. Ass'n, March 26, 1904) arrives at the following conclusions: Simple infection does not account for the suddenness of the attack nor early severity of the pathologic changes in acute appendicitis. The evident interference with the blood supply is best accounted for by an increased intra-appendicular pressure. Simply injecting bacteria into the appendix will not produce appendicitis unless used in abnormal amounts and of great virulence. Subperitoneal ligation of the appendix with a simple ligature without distention cannot be made sufficiently permanent to produce a general infection of the appendix, typical of appendicitis in the human being. Experiments in dogs show that hydraulic pressure equal to the arterial tension maintained within the lumen of the appendix for a short time is promptly followed by typical appendicitis. The blood supply in an extremity may be cut off with immunity for hours; but in the appendix the ever-present bacteria at once begin an infection, their entrance into the tissues being facilitated by the opening of normal and traumatic avenues by the very distention which cuts off the circulation. The importance of making a complete diagnosis and prognosis within the first twelve hours of the attack is emphasized. This study suggests the possibility of infections or other lesions being produced in other hollow viscera, especially in the gall-bladder, the stomach and intestines, by temporary overdistention.

Gonococcus Metastasis.—Suppurative lesions occurring in the course of a gonorrhea, other than those in the urethra, in which attempts have been made to demonstrate the gonococcus as the exciting cause, have been made by a number of writers, but the cases are comparatively infrequent. J. McColgan and J. M. Cooper (Jour. Am. Med. Ass'n, April 2, 1904) report an instance where, in a woman of forty years, a sudden attack of what was apparently rheumatism affected the thumb and index finger of one hand. The patient's husband had been under treatment for gonorrhea during the previous month, but no signs of infection could be demonstrated in the wife. No improvement took place and incisions made about a week later into the affected area resulted in the evacuation of a small amount of purulent material. The process extended to the hand and necessitated a freer exposure. The flexor tendon was involved and after healing had taken place, was considerably shortened. No joint anchylosis was present and the authors are inclined to believe that the condition was purely a tendovaginitis. Examination of the pus showed the characteristic organisms of Neisser. Attention is called to the necessity of routine examinations of the pus from such doubtful abscesses, especially those connected with the tendon sheaths. The liability to the transmission of the gonococci to others and the production of a gonorrheal ophthalmia is much more probable than where the disease is localized in the urethra, because in the latter case, definite precautions are usually insisted on. Whether the patient presents the symptoms or not, proper treatment directed to the urethral conditions should be employed in all cases.

Chloroform in Surgical Anesthesia.—A great deal of experimental work has recently been carried on in England bearing upon the administration of chloroform. Dudley W. Buxton (Med. Press, March 23, 1904) gives a further description of the Vernon Harcourt inhaler, which it will be remembered is so constructed as to give exact percentage vapors to the patient. In conclusion he says that the gist of his communication is that a vapor of chloroform not exceeding two per cent. is quite adequate for surgical anesthesia and that its use avoids most of the great dangers of that anesthetic. Such a percentage can be obtained with very great exactness by the use of Harcourt's inhaler. Its technic, which is exacting but not intricate, must be thoroughly mastered in order that the most satisfactory results can be obtained.

Surgical Treatment of Perigastric Adhesions.—It is a favorite belief here that American surgery has surpassed that of the Continent and of England. There is, however, still a good deal to learn from English students concerning the surgery of the stomach. Their journals are filled with the reports of successful cases which have received radical surgical treatment for so-called chronic dyspepsia. E. P. Paton (Lancet, Feb. 6, 1904) says some idea of the frequency with which adhesion about the stomach may be expected is shown by the following post-mortem records: In five per cent. of cases evidence of an active ulcer or of the scar of an old ulcer is present. Fenwick states that in 405 of such ulcers there are adhesions. The situation of these adhesions are as follows: In 143 cases they are between the stomach and the pancreas. In 92 cases to both the liver and the pancreas. In 31 cases the stomach is attached to the colon, liver, spleen and mesentery. Adhesions to the anterior wall are never met with. The history of cases suffering from perigastric adhesions is usually a long and unhappy one. They generally, if carefully traced, are referable back to an old acute attack giving the characteristic sign of ulcer. When these more acute symptoms have passed, the chronic disability shows little tendency to yield to treatment. Pain is not infrequently confined to one location. It is variable in its severity. It is not infrequently uninfluenced by the taking of food. It is frequently much influenced by posture. Exertions are in some cases very likely to bring on pain, sometimes with great suddenness and severity. Local tenderness is very frequent. It may be over the seat of the subjective pain, but not always so. Vomiting does not seem to be very frequent. In those cases in which the gall-bladder and stomach are involved, jaundice may occur. Careful dieting characteristically has no effect upon the pain, and a further point in diagnosis of the condition is that the general health as a rule does not suffer proportionately to the apparent extent of disease. In most cases a tentative diagnosis can be made which will be sufficiently strong to warrant exploratory incision. The treatment consists in the separation or division of the adhesions. This is easy, but the question of preventing their reformation is a very different problem. Exclusion of every element of sepsis is a very important factor. Absence of antiseptic solutions in the abdominal cavity is another. Peritoneal patches over all raw surfaces are of course very much to

be desired. Occasionally sterile oil silk has been used, but it is usually better not to insert foreign bodies into the abdominal cavity. Karl Vogel has shown that none of the membranes and other materials used to prevent peritoneal adhesions have any value, the best results having been obtained by the introduction of large quantities of sterile salt solutions. Promotion of free movement among the viscera by having the patient move from side to side in bed after abdominal section is far more important in the prevention of re-adhesion than any other procedure. The old method of keeping cases of abdominal section too rigidly at rest is probably responsible for many of these adhesions. Forty-two cases are recited in this paper, and the nature of the results are such as to make the most conservative reader agree that no case of chronic dyspepsia should be allowed longer to suffer on.

Surgery of the Prostate.—The immense amount of literature on this subject and the contentions of the espousers of the varied technics show that as yet no definite conclusion as to choice of methods has been reached. Thornley Stoker (Brit. Med. Jour., Jan. 30, 1904) deals with the removal of the prostate when the bladder has been opened, with the methods of opening the bladder and treatment of the parts subsequently. He is a champion of the suprapubic operation. When the bladder has been opened, the prostate should be thoroughly examined with the right hand, the left being in the rectum, which has previously been thoroughly cleaned. A pair of blunt end scissors are used to snip through the floors of the bladder and capsule of the gland. This incision should be made over the most projecting part of the larger of the two lobes. The whole gland may be deliverable through the one incision, but if the lobe first incised comes away without its fellow, a second incision should be made. It is well to carry the incision with the scissors well down into the tissue of the prostate. The question of attempting to preserve the prostatic urethra generally settles itself. The urethra may be so glued to the gland that it is torn away with it. Records show that cases do just as well when the urethra has been removed as those in which it has been preserved. As to the nature of prostatic enlargements, the author believes that there are three conditions of senile enlargement: (1) A true hypertrophy of the gland without interstitial growth. (2) The existence upon and within the substance of the prostate of one or more encapsulated tumors distinct from the substance of the gland proper, and either myomatous or adenomatous. (3) A mixed condition of true hypertrophy and interstitial growth of the second class. This condition is much the most common. Gilbert Barling, in the same issue, states that castration as advised by White, which was welcomed with such enthusiasm and vasectomy, which gave promise of equal brilliant results, have both fallen into disrepute in the treatment of prostatic enlargement. The unfortunate fact is, that the diseased enlarged prostate does not diminish as does the normal gland under section of these organs. He advocates Freyer's method of suprapubic prostatectomy. His conclusions are as follows: (1) It is possible to enucleate the prostate; (2) the prostatic urethra is almost invariably, if not always, removed with the organ; (3) if left it will necrose from want of blood supply; (4) stricture does not follow this damage to the urethra; (5) the operation often restores the function of the bladder to an absolutely normal condition. Cuthbert F. Wallace, in same issue, states that an anatomical knowledge of the normal prostate is most essential in these days. The term "fibrous capsule" is used to express the fibrous sheath derived from the rectovesical fascia. There is no capsule in the sense of a separable membrane such as invests the kidney. Nor can the prostate be shelled out of its surroundings like a lymphatic gland or the thyroid. He concludes (1) that the usual form of prostatic enlargement is adenomatous; (2) that this tissue may surround the urethra or form lateral masses or exist in all three parts; (3) that there is always left behind a definite lamented envelope containing glandular tissue derived from the expanded outer portion of the organ; (4) that the amount of envelope left on the surface of the tumor after removal depends on the depth at which the enucleating finger cleaves the envelope; (5) that the rectovesical fascia is not opened nor the plastic plexus of veins injured. (6) He suggests the term surgical capsule for the envelope formed from the prostate by the extension of the adenomata. It is a pathological formation. To its presence is due the small amount of bleeding and the absence of urinary extravasation. In the so-called total prostatectomy, the enucleating finger never passes outside the limits of the prostate, there being always some of this adventitious tissue left behind.

Etiology of Fibrous Orchitis.—Recently the opinion is gaining more and more ground that gonorrhea is an important cause of interstitial orchitis which formerly was looked upon as almost always syphilitic. F. Lesser (Münch. med. Woch., March 22, 1904) detected fibrous changes in 4.5 per cent. of all autopsies on males; in 70 per cent. of these there were other well-marked lesions of syphilis. In another, undoubted specific condition, lobulated liver, syphilis elsewhere was manifest in only 57 per cent., so that it is not wrong to assume that most of the other cases of orchitis were also syphilitic and that gonorrhea really plays a very subsidiary rôle and that the process generally remains restricted to the epididymis. Other unquestionable but rare causes are contusions, mumps, rheumatism, masturbation and bodily exertion.

Veratrum Viride in Surgery.—The physiological action of this drug has been more carefully studied by Dr. H. C. Wood than any other observer, says Chas. L. Bonifield (Am. Jour. of Obst., January, 1904). It relieves inflammatory pain and lowers the temperature. In appendicitis after the principles taught by Ochsner have been applied—that of keeping the stomach and bowels emptied to arrest the peristaltic movements—veratrum viride meets every other indication for treatment. It sustains the heart by making it work easier; it stimulates elimination of the poison by the liver, kidneys and skin; it lowers the temperature and relieves the pain. It is possible that by its action upon the circulatory system brings an army of leucocytes to the field of battle and in this way helps to destroy the invading army of germs. The circulation is much more profoundly influenced by veratrum than by hot and cold applications. In rapid acting hearts in postoperative peritonitis, after the bowels have been emptied, veratrum is a most valuable agent in slowing the heart's action. It is better than digitalis and strychnine, as it lessens the cardiac labor and gives time for rest between beats. Here, too, its eliminative action is most helpful. The preparation of the drug preferred by this author is Norwood's tincture. Where prompt action is wanted, as in eclampsia, it is best to give deep subcutaneous injections. Or, it may be given in this way in appendicitis, if it is desirable to keep the stomach empty. It produces some irritation at the point of injection, though the writer has never seen an abscess. The dose varies from five to thirty minims according to the size and age of the patient. The toxicity of the drug has been overrated by the rank and file of the profession. H. C. Wood says that it is one of the safest of all the cardiac depressants.

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RENAL DECORTICATION VERSUS SECTION.

Guiteras has recently compiled the results of some 120 cases in which the diagnosis of chronic nephritis were reasonably well established prior to decapsulation. In each one of these patients, the postoperative changes, both from a clinical and pathological standpoint, were watched with extreme care. Looked upon in a light as favorable as might be compatible with accuracy, 16 per cent. of the total number may fairly be considered cured. Forty per cent. were believed to be improved, 11 per cent. were unimproved and in 33 per cent. the operation was followed by early death. Suker reports the histories of 15 patients with albuminuric retinitis, for whom the kidneys were decapsulated. Of these, all save one had died within the two-year limit, and the history of the remaining case was vague.

Walker Hall and G. Herxheimer in the *British Medical Journal,* April 9, 1904, consider that the value of these statistics is minimized by the following considerations:

"First the operation has been necessarily restricted to the latest stages of the disease and has often been performed only as a last hope. Second, the exact stages and extent of chronic nephritis do not permit of accurate diagnosis. Third, chronic nephritis is as a rule characterized by acute exacerbations and frequent remissions. Its anatomical course is in the main a progressive one and the remittent stages often occur under treatment other than that of decapsulation. Of the above 33 per cent. mortality, 26 per cent. died from chronic interstitial nephritis and of the remainder in 25 per cent. death occurred from the so-called chronic parenchymatous nephritis and in 75 per cent. diffuse nephritis was assigned as the cause."

Emerson, Johnson, Claude, Albarran and Bernard are practically unanimous in their belief, which in every case is based upon experimental work, that no new blood vessels of a sufficient size to affect the nutrition of the kidney to any appreciable degree are formed. Enough work has been done on this subject to justify the conclusion that the belief which was originally held both by Edebohls and by others who were early interested in the operation of decapsulation, viz., that the improvement, which often follows its employment, was due to an increased vascularization of the part, is erroneous.

Clinicians, who have observed very marked improvement follow decapsulation in a small but certain number of cases, have been at a loss to understand the cause of the change. It has been claimed rather widely that experimental work on the healthy organ was of no value, first, because the pathological changes, to combat which the operation might be indicated in the human being, were absent in the animal; and second, because of the morphological differences existing between the human kidney and those of the lower vertebrates. The latter objection has not in general been viewed as having much material significance, and an answer to the former is at length at hand.

After creating an artificial nephritis in the kidneys of some fifty-five rabbits, Hall and Herxheimer found practically the same conditions to obtain as was reported in the case of the normal kidneys decapsulated by previous investigators.

Neutral ammonium chromate, the substance originally employed by Burmeister, proved to be the most certain and satisfactory way of inducing the experimental nephritis. From .5 to .75 c.c. of a 2.5 per cent. solution was injected into rabbits weighing from 1,500 to 2,000 grams. This invariably produced an intense acute congestion, followed by degenerative necrosis of the epithelium of the convoluted tubules; by the appearance of quantities of hyaline casts and a variable amount of albumin. Glomerular and interstitial

changes were conspicuously absent both immediately after the injection and for some time thereafter. In the case of those animals who survived twenty days, however, small cell infiltrations were visible around the medium sized blood vessels, indicating that a possible interstitial change was beginning. The effects of the irritant varied in different animals, although an effort was made to obtain a relation between the body weight and the amount of chromate injected. In most cases in which albumin appeared in the proportion of four to one thousand, death subvened in convulsions or in coma within ten days. Concerning hyaline casts in the human urine, it is interesting to note that these were invariably present.

From the anatomical standpoint, decapsulation does not, in the opinion of these authors, offer any advantages. If, as they say, "there exists no anatomical basis for the operation";—increased blood supply to the part—"in acute degenerative nephritis, it is surely impossible that in chronic nephritis the capsular changes will be less marked." This is based on what seems a reasonable belief that the laceration and hemorrhage into the parts would, in the presence of a tendency to sclerotic change, increase the formation of scar tissue.

Have we not at length reached a standpoint from which a different view must be taken of the causes which underlie the unquestionable improvements which do occasionally take place in patients operated upon by this decapsulation method?

For about two years, clinicians and experimental workers have been at variance with each other, the one set of observers claiming that a few cases were unquestionably improved, while the others held that in view of laboratory findings, this improvement was chiefly in the imagination of the operator. The reply of the surgeon to these insinuations was briefly to the effect that in the eyes of the laboratory man, "all cats have nephritis."

Pel, Jaboulay and others have for some time been suggesting that the improvement, evidence of which has been tabulated by Guiteras, arises more from the reaction of the operation upon the sympathetic ganglia, rather than in the increased blood supply to the part. Simple section may therefore give as good results as complicated decortication. This is a new phase of the situation which has much of theoretical and practical interest in it.

THE LAW AND THE CRIMINAL.

The recent conviction for murder, in this city, of an undoubted victim of sadism, has probably been a source of surprise to not a few medical men particularly to those interested in medico-legal cases. This instance serves to point out a marked deficiency in that important guardian of society, the criminal law. Only too frequently do its dignified interpreters ignore, consciously or unconsciously, the manifold susceptibility of the human mind to loss of equilibrium. To be sure, the opinion of the alienist, as expert testimony, in cases of suspected mental derangement, is given the proper degree of consideration. But the impalpable forms of insanity underlying many offenses against the social order, are rarely recognized by counsel or judge. It is in the imperfect defense and unjust conviction of such cases, that a severe indictment must be brought against the legal fraternity.

It is almost thirty years since Lombroso in his book, "L'Uomo delinquente," gave birth to the modern science of criminology. His views, however, have not yet received universal acceptance. Students of criminality are still arrayed in two opposing camps, the one maintaining that the criminal is born, not made, the other, that he is the product of his environment. From the viewpoint of the biologist it matters little which of these views is the correct one. In each he perceives a moiety of the truth. For is not the animal organism a plastic entity acting upon his surroundings, in turn to be reacted upon by them? It bears the imprint of the past and yields to the molding influences of the present. Heredity has long since been accorded its proper rank among the motive forces of humanity and yet the law will hardly recognize it. To show that the culprit had criminal or degenerate antecedents, is not accepted as a defense. Unless tending to corroborate other direct evidence as to mental disability, such evidence would not be allowed to go to the jury.

"What," it may be asked, "is the cause of this failure of jurisprudence to recognize the biological basis of crime?" In the first place, the modern legal system places an exaggerated value upon the authority of the past and the edifice of the law is largely built upon the practices and precedents of our forefathers. The researches of psychologist and criminologist are given scant courtesy by the learned disciples of Blackstone. In the second place, the education of the legislator and the lawyer is but ill adapted to prepare

a proper soil for the reception of modern scientific thought.

In his "Riddle of the Universe," Ernest Haeckel stigmatizes the august guardians of the law as having "but a superficial acquaintance with that chief and peculiar object of their activity, the human organism, and its most important function, the mind." All that is required of those whose duty it is to shield society from its enemies is a knowledge of human nature and the criminal code. But this is not sufficient. A poor pedagogue indeed would he be whose lore extended little beyond the subject-matter of his instruction and the rules of his school. It is now recognized that the successful instructor must have a thorough grounding in psychology and its parent, physiology. Moreover, in the large cities there is a growing demand for teachers whose knowledge extends into the domain of neuropathology, who have the ability to recognize and deal with defective children and abnormal types. How much more important it is that he who is called upon to judge his fellow-man, should not only possess the trained observation of the psychologist, but should also be familiar with the various clinical forms of mental disease and the extensive literature of criminology. This would be too much to expect of the ordinary lawyer or jurist, for the knowledge required of them in their own technical sphere is sufficiently deep and comprehensive. But is it too much to demand that he who specializes in criminal law and particularly, he who presides over a criminal court, shall have taken his degree in medicine preparatory or subsequent to the prosecution of his legal studies? This would be expecting of the jurist that breadth of perspective and liberality of mind which are indispensable in this enlightened age.

In the Republic of Plato, the rulers of the State are philosophers. Is it altogether Utopian to expect that our modern legislators should possess that illuminating wisdom, which, poised upon the broad basis of a liberal culture, transcends time and place, and scorning the petty considerations of personal gain or ambition, labors for the weal of humanity? Only then will the statutes be framed with a just consideration for the mental and moral delinquents. The spectacle of the State leading to the chamber of execution a trio of brothers in whom the curse of Cain was the culmination of a career of moral deterioration, will no longer offend the eyes of civilization. Let it be demanded, at least, that they who promulgate the laws and they who hold the scales of justice, shall be learned men, scientists, if you will, in touch with the divine harmony of the universe, and not mere "bachelors of law."

NERVE SURGERY FOR THE RELIEF OF PALSIES.

Nerve anastomosis is an important recent development in the surgery of the peripheral nerves for the relief of palsy. Since the work of Faure and Foret in France, and Ballance and Steward in England (1895) a few cases have been from time to time reported. The work, however, received its most decided stimulus in Kennedy's report of a successful case of facio-spinal accessory anastomosis for convulsive tic which was followed by experiments on dogs that cleared up some points in the physiology of restoration of function. Kennedy divided peripheral motor nerves supplying extensor and flexor groups of muscles and sutured the proximal stump of the nerve supplying the extensor group to the distal stump of the nerve supplying the flexor group. A temporary disturbance of motion was soon followed by complete restoration of function. Furthermore the brain centers representing these groups of muscles were found reversed on electrical irritation of the cortex. Through a process of education the cortical centers which represented the extensor and flexor groups of muscles had become reversed. A fact which is still without a comprehensive explanation. While the application of facts derived from experiments on the lower animals cannot always be applied to the human subject without reserve, nevertheless this work of Kennedy's has received important corroboration in the operations recently undertaken for the relief of old facial palsies from mastoiditis or from interstitial neuritis as in Bell's palsy. It has been found that if the distal stump of the facial nerve be engrafted in the proximal stump of a healthy nerve there is more or less shorter restoration of function in the facial distribution. After a longer or shorter period of reeducation the restoration of function is very considerable, which in some instances has been almost complete.

The nerves chosen for anastomosis with the facial were first the spinal accessory, and more recently the hypoglossal. The latter has been chosen by the more recent operators in this country. Frazier, of Philadelphia, reports one case, and Taylor and Clark, of New York, three cases. In all of these cases the report followed too soon after the operation to know the extent of recovery. The consequent paralysis following

division of the hypoglossal and the suture of the proximal stump to the distal stump of the facial contributes one of the chief objections to the operation. This is partially overcome by a side implantation of the facial with only partial division of the hypoglossal, and other similar modifications, but in these instances the results of the operation cannot be expected to be as good as the results following the complete anastomosis. Ballance and Stewart have proven experimentally that to get a more or less complete restoration of function after nerve suture there must be a nice apposition of the sutured ends. Another more or less serious drawback to faciohypoglossal anastomosis is the difficulty of the operation as compared with the faciospinal accessory anastomosis. The latter operation being comparatively simple. We must know the exact results of many operations before we can say which procedure is preferable.

ECHOES AND NEWS.

NEW YORK.

Dr. R. W. Taylor.—Dr. Taylor has removed from his old offices where he has been so many years to 142 West Forty-eighth Street.

The New Bellevue.—Plans for the new Bellevue were exhibited last Saturday at Columbia University, and they promise much for the alleviation of the wretched condition in which New York City now finds herself for adequate hospital accommodation. The buildings may cost the city $10,000,000 before they are finished but no better appropriation could be made to the conservation of the working power of New York City's poor. New York is the largest and most important city of the United States. Its city hospital accommodations are painfully inadequate. The new hospital, if built on the plans submitted, will be not only of great service to the city but will be an ornament as well. Some of the details of the plans will be presented to readers of the Medical News in a subsequent issue.

Hospital Appointments.—The following gentlemen of the College of Physicians and Surgeons secured hospitals during the past week: Rochester City, J. C. O'Connor. St. John's (Yonkers), William Blancard. St. John's (Brooklyn), 1st, R. L. Moorhead. Orange (N. J.) Memorial, Julius Levy. St. Francis, 1st, R. H. Dieffenbach, C. D. Cleghorn, S. W. Wynne, W. H. Whiton. Lincoln, 1st, C. C. Kimball, B. G. Allen, C. W. Woodson. St. Mary's (Brooklyn), 1st, M. T. McSheehy, E. J. Murphy, W. E. McCollum, M.D., 1903. St. Barnabas (Newark, N. J.), G. H. Schenck; Alternate, F. H. Wilson. New York Skin and Cancer, Fred Wise. Almshouse and Workhouse, J. C. Hance, C. H. Weir.

Report of St. Mark's Hospital.—Owing to the great suffering among the poor during the severe winter, St. Mark's Hospital has been taxed to its utmost to give relief to the sick, not only in its wards, but also in its out-patient department. The annual report of the board of managers shows, however, that the hospital has responded as never before in its history to all these demands. During the year ending in March, 4,594 hospital days of treatment were devoted to patients without compensation, while eighty-six days were given to patients who could pay less than a dollar a day. In the out-door department, 2,031 patients made 13,217 visits to the hospital, while 1,660 meals were given to poor persons. In all, 3,344 patients were treated, of whom only 77 died, and 26 of these within three days after admittance to the hospital. During the year, in spite of the additional demands upon the resources of the hospital, the board of managers has paid off one mortgage of $5,000, and reduced another by $2,500. Taking into account all expenditures, the average cost of each patient a day was $1.81.

Church Collection for Hospitals.—Hospitals which receive money from church collections, find their appropriations curtailed this year, because at the last collection the contributions fell off from $83,000 to $75,000. The committee in charge of the fund met in the Mayor's office recently and apportioned it as follows: Montefiore Home and Hospital, $6,400; Mount Sinai Hospital, $4,453; Roosevelt Hospital, $4,216.99; St. Luke's Hospital, $3,758.34; St. Mary's Free Hospital for Children, $3,757.97; German Hospital, $3,159.05; Hospital for the Ruptured and Crippled, $3,154.20; Post-graduate Hospital, $3,133.27; Nursery and Child's Hospital, $3,094.41; Mothers' Home of Misericordia, $2,867.15; Lincoln Hospital and Home, $2,717.70; Infants' Asylum, $1,841.73; Home for Incurables, $1,741.10; Isabella Heimath, $1,754.29; Sloane Maternity Hospital, $1,639.53; French Hospital, $1,530.29; Beth Israel Hospital, $1,417.22; Orthopedic Dispensary and Hospital, $1,401.60; Hospital for the Lying-in Society, $1,399.81; Homeopathic (Flower) Hospital, $1,099.90; St. Mark's Hospital, $960.67; New York Ophthalmic Hospital, $920.66; New York Infirmary for Women and Children, $794.03; New York Eye and Ear Infirmary, $694.16; Babies' Hospital, $667.85; New York Polyclinic Hospital, $663.56; Skin and Cancer Hospital, $653.57; Manhattan Eye and Ear Hospital, $650.52; J. Hood Wright Memorial Hospital, $606.64; Hahnemann Hospital, $526.27; House of the Holy Comforter, $472.26; General Memorial Hospital, $464.33; Lebanon Hospital, $387.81; College and Hospital for Women, $250; Ophthalmic and Aural Institute, $250; St. Andrew's Convalescent Hospital, $250; Convalescent Home, $250. The amount distributed is $64,000, and is known as the "undesignated" fund.

PHILADELPHIA.

Bequests to Charity.—By the will of George Huster, property to the value of $25,000 is bequeathed to various hospitals and homes in this city.

Pasteurized Milk Society.—This institution, which began its work eight months ago by distributing 4,500 bottles of milk monthly, is now giving out 3,000 bottles daily. Six branch stations are now in service and another will probably soon be started in Kensington. The price charged for the milk barely covers the cost of Pasteurization. Contributions since the plant started aggregate $5,500.

Pathological Society.—The annual conversational meeting of the society was held on Thursday evening, April 28. The address was delivered by Dr. M. J. Rosenau, Director of the Hygienic Laboratory of the Marine Hospital Service, the topic selected being "Some Studies in Yellow Fever." Following the address a reception was tendered Dr. Rosenau at the University Club.

Friend's Asylum, Frankford.—The report of this institution for the past year shows that 116 patients

were admitted, 48 of these being men. The total number treated was 265. Several patients were refused admission because of lack of room. A new wing is to be erected at a cost of $20,000; this will furnish thirteen rooms for patients and two sun parlors. Of the 1,738 male patients that have been treated at the institution the largest number of any one class were farmers, 289; of clerks there were 165; merchants, 145; physicians, 46; lawyers, 33. The causes of insanity in the 2,271 patients were, in part, ill health, 420; mental strain, 406; intemperance, 246; domestic trouble, 134; love affairs, 107 women and 28 men.

State Charity Exhibit.—Nearly 1,000 photographs, charts, etc., of the hospitals, asylums, homes, and prisons of Pennsylvania have been shipped to St. Louis for exhibit at the Fair. Among them will be illustrations of the hospitals at the bottom of mine shafts and the Pennsylvania Railroad service with which every engine east of Pittsburg is being equipped. Among the statistics of Pennsylvania for 1904 are: Invested in charitable institutions, $60,000,000; the State is caring for 16,000 people in homes, 30,000 in alsmhouses, and 12,000 in insane asylums. The annual charity expense is $14,000,000.

To Prosecute Unlicensed Physicians.—Recent disclosures by the coroner's office regarding the baby farm traffic in this city have led to concerted efforts to put a stop to this and other illegal medical practice. The County Medical Society has set aside a fund for this purpose and will appoint a committee of three to aid the Coroner, District Attorney and the Director of Public Safety in obtaining evidence against and prosecuting illegal practitioners. It is said that the latter number at least 100 in the city. The *Press* is endeavoring to put in shape a bill that will be introduced at the coming session of the legislature to more closely restrict or make impossible the doings that have been recently unearthed at many of the "farms." To draft the bill there has been formed a committee consisting of Dr. E. E. Montgomery, Dr. J. C. Clark, Dr. Cadwallader, of the Woman's Medical College, G. W. Pepper, representing the Bar, and Miss Richmond, of the Society for Organizing Charity.

CHICAGO.

To Receive Ten Thousand Dollars on Account of Amputation of Frozen Feet and Hands.—It is said that Ellen Robinson, a graduate of the Illinois Training School for Nurses, Class of 1902, now at the Presbyterian Hospital in this city, recovering from the amputation of her hands and feet, will receive from the Alumni of the school a fund of $10,000, to be applied to her support the rest of her life. Miss Robinson, while nursing at Monticello, Ill., this winter, lost her way in a blinding snowstorm, and her hands and feet were so badly frozen that amputation was necessary.

Bazaar to Aid Hospital.—After nine years of work, the people of South Chicago are preparing to establish in the center of that district a permanent home for the South Chicago Hospital of sufficient capacity to meet the demands of that part of the city. With that object in view, the directors of the only institution of that kind located in South Chicago district announce a two weeks' bazaar for the purpose of starting a permanent hospital fund. It is intended to replace the present small and inadequate institution with a hospital building involving the expenditure of $100,000.

Osteomalacia.—Dr. Thomas A. Davis read a paper on this subject before the March meeting of the Chicago Surgical Society, and reported a case. The author believes that this is the first case that has been demonstrated in North America in a male, with apparent arrest of the disease, reported one and one-half years after operation. The patient was a Norwegian, aged thirty-three years. The family history, previous history, present illness, exploration of fracture, pathological fracture, diagnosis, differential diagnosis, etc., were gone into extensively by the essayist, also the treatment, subsequent history, and skiagrams of the case were exhibited. Retrospectively, taking the symptomatology as completely evolved in this case, the author said the simplicity of diagnosis was quite apparent. With but a slight knowledge of the disease, the inference could scarcely be incorrect. But taken at such a time as that previous to operation, the diagnosis was not so easy. These were the objective symptoms: Shortening of stature, curvature of the spine, barrel-shaped chest, none of which had been noticed by the patient. The subjective symptoms were rheumatoid pains in the extremities and spine, with possible mental manifestations of stupidity, and a mild degree of melancholia and myasthenia. As to the objective symptoms, one commonly meets with them among laboring people, without attempting to determine the cause as to rickets or occupation, etc. There was nothing characteristic about the pains complained of, and it is yet questionable as to the mental disturbance. It is quite clear that there is no individual pathognomonic symptom of osteomalacia, and still authors have expressed astonishment at the late date of recognition, or complete failure to diagnose the disease. At the present time, with no knowledge of the cause of the disease, its real nature cannot be recognized until advanced bone changes have taken place. In reviewing the history of a large number of cases, the author finds that the symptoms almost universally mentioned are rheumatoid pains in the extremities and spine, without swelling, accompanied by myasthenia, these symptoms preceding for some months deformity and fracture. With the history of such symptoms, the X-ray should show the lessened density of the bones, and serve to establish a diagnosis. Dr. D. J. Davis presented an extensive pathological report of this case. He gave a brief résumé of the theories advanced to explain osteomalacia, none of which he said is satisfactory. It is quite likely that softening of bones is produced in a variety of ways, and that different forms probably require entirely different explanations.

Extirpation of Suppurating Kidney.—Dr. Frederic A. Besley read a paper on this subject before the same society, and presented a case. Ether was the anesthetic used, and the organ was removed through a lumbar incision. The patient made a perfect recovery. He said a retrospective view of the case presented one important question, namely, Was the removal of the kidney the wisest procedure, or would it have been better surgery to have made an effort to restore the patency of the ureter and preserve the organ? In this particular case he did not think he was justified in jeopardizing the patient's life by exposing him to a prolonged operation and a prolonged convalescence.

GENERAL.

A Dispensary for Paterson, N. J.—That the city of Paterson is to have a dispensary of its own was decided April 21, at a meeting of the Charities and Correction Committee of the Board of Aldermen. The clerk of the board was instructed to solicit bids for drugs on a schedule submitted by City Physi-

cian Van Noort which would supply sufficient to run the dispensary for about three months. Dr. Van Noort said that he had received the dispensary outfit belonging to the late Dr. Myers, the gift of his brother, George A. Myers, and that it would require few additions. A prescription clerk will be engaged by the city for about three hours a day at a salary of about $25 a month, and it is expected that the new plan will result in a reduction of expenses.

Addition to Harvard Medical School's Infirmary.—The work of constructing the contagious ward of the Stillman Infirmary at Harvard is to begin soon, and it is hoped to have it completed by next fall. The recent gift of $25,000 from Mr. Stillman, added to his previous gift of $50,000, has made it possible to carry out the project in a manner completely satisfactory to the college authorities. The new building is to be of the same style architecturally as the infirmary, and is to be connected with it by a semicircular passageway of two stories, the lower of masonry and the upper an open colonnade. In dimensions the new building will nearly equal the present building, being about 80x40 feet, and four stories high.

The Tri-State Medical Society of Iowa, Illinois and Missouri.—This society will meet in St. Louis, June 15, 16 and 17. An interesting program is being prepared, and some of the most distinguished physicians and surgeons of the country will attend the meeting. The president is Dr. W. B. La Force, Ottumwa, Iowa; and Dr. Louis E. Schmidt, 1003 Schiller Building, Chicago, is the secretary. Dr. James Moores Ball, 3509 Franklin Avenue, St. Louis, is Chairman of the Committee of Arrangements.

American Climatological Association.—The Committee on Nomenclature of this association suggests the following classification for cases of pulmonary tuberculosis: *Incipient.*—Slight physical and subjective signs, with history indicative of pulmonary tuberculosis. Sputa, if present without bacilli; *First Stage.*—Definite physical signs of localized infiltration; total involvement less than half a lobe, whether at one or more points; cough and expectoration with bacilli; constitutional symptoms, slight. (In disseminated cases expectoration and bacilli may be absent with constitutional symptoms more severe.) *Second Stage.*—Infiltration of single or multiple areas approaching or equal in amount to one lobe; or smaller area in stage of softening; cough and expectoration with bacilli; constitutional symptoms, severe. *Third Stage.*—Infiltration in excess of one lobe or if less in stage of well developed excavation; more severe constitutional symptoms. They also suggest a classification of results of treatment as follows: *Progressive.*—All essential symptoms and signs continue unabated. *Quiescent.*—Constitutional symptoms slight or entirely absent; physical signs improved or unchanged; cough and expectoration with bacilli still present. *Arrested.*—Absence of all constitutional symptoms; expectoration and bacilli still present; physical signs may or may not persist; foregoing to have existed for at least three months. *Apparently Cured.*—All constitutional symptoms and expectoration with bacilli absent for a period of three months. *Cured.*—All constitutional symptoms and expectoration with bacilli absent for a period of two years under ordinary conditions of life.

American Climatological Association.—The twenty-first annual meeting of the Association will be held in the banquet room of the Aldine Hotel, Chestnut Street, above Nineteenth, Philadelphia, on June 2, 3, and 4, 1904. The following program has been arranged: President's Address, by Dr. J. C. Wilson, Philadelphia; Climatology as a Study in Medical Schools, by Dr. S. E. Solly, Colorado Springs; The Climate of Santa Barbara, California, by Dr. W. H. Flint, Santa Barbara; The Climatology of Muskoka, Ontario, Canada, by Dr. J. H. Elliott, Gravenhurst, Ont.; Weather Observations in the Adirondack Mountains, by Dr. Lawrason Brown, Saranac Lake, N. Y.; Some Meteorological Comparisons of the Winter of 1903-4, by Dr. Carroll E. Edson, Denver, Col.; The Climates and Diseases of Central America and Panama, by Dr. J. Edward Stubbert, New York City; Ocean Bathing, by Dr. Philip Marvel, Atlantic City, N. J.; A Study of the Delirium Accompanying Heart Disease, by Dr. R. G. Curtin, Philadelphia; Phases of Arterial Sclerosis or Painful Cardiac Affection, by Dr. Judson Daland, Philadelphia; The Mechanical Treatment of Organic Heart Disease, by Dr. Charles E. Quimby, New York; Effect of Altitude upon Blood Pressure, by Drs. C. F. Gardiner and Henry W. Hoagland, Colorado Springs; A Study of Infection in Pulmonary Tuberculosis, by Dr. F. M. Pottenger, Los Angeles; What Shall We Do with Our Tuberculous Patients? by Dr. F. I. Knight, Boston; Some Cases of Pus Infection Simulating Pulmonary Tuberculosis, by Dr. Robert H. Babcock, Chicago; Pulmonary Tuberculosis in Children, by Dr. William Duffield, Phœnix, Arizona; Tuberculosis in Children, by Dr. Thomas Darlington, New York City; The Use of the Fluoroscope as an Aid in the Physical Diagnosis of Pulmonary Tuberculosis; its Limitations and Its Advantages, Based on Three Years' Experience, by Dr. Charles L. Minor, Asheville; Recent American Contributions to the Methods of Prevention and Treatment of Pulmonary Tuberculosis: (1) Antituberculosis Societies and Their Work, (2) Exposition in Baltimore, (3) Facilities for Out-door Treatment, (4) New Sanatoria, by Dr. A. C. Klebs, Chicago; A Plea for the Revision of Terms Used in Physical Examination of the Lungs, by Dr. J. Hilgard Tyndale, Lincoln, Neb.; The Pitch of the Normal Pulmonary Valve Sound, and the Practical Significance of Its Changes in Acute Lobar Pneumonia and in Emphysema of the Lungs, by Dr. Howard S. Anders, Philadelphia; Meteorologic Conditions in the Causation of Lobar Pneumonia, by Dr. James M. Anders, Philadelphia; Some Unsettled and Important Problems in the Treatment of Acute Lobar Pneumonia, by Dr. Beverley Robinson, New York City.

Association of American Physicians.—The nineteenth annual meeting will be held in the New Willard Hotel, Washington, D. C., May 10 and 11, 1904. The following program is announced: The President's Address, by Wm. T. Councilman, Boston; General Business; The Influence of Supra-Renal Extract upon Absorption and Elimination, with Demonstrations, by S. J. Meltzer and John Auer, New York; Polyuria in Typhoid Fever, by M. H. Fussel, H. S. Carmany and H. Hudson, Phila.; Polyuria in Typhoid Fever, by James C. Wilson, Philadelphia; Cases of Venous Thrombosis Occurring in the Course of Typhoid Fever, by W. S. Thayer, Baltimore; Clinical Studies in Arteriosclerosis, by Alfred Stengel, Philadelphia; An Investigation of the Effects of Cardiac Stimulants, Especially Strychnine, on the Blood Pressure in Febrile Conditions, by R. C. Cabot, Boston; A Supposed Cause of High Tension Pulse in Nephritis, by W. H. Thomson, New York; Poisoning by Illuminating Gas—A Clinical Study of Fifty Cases, by W. G. Thompson, New York; Nephrectomy for Renal Tuberculosis, by I. N. Danforth, Ann Arbor; Abdominal Pain from Unsuspected Irritation of the Internal Inguinal Ring,

by Chas. G. Stockton, Buffalo; The Mechanism of Exophthalmos, by W. G. MacCallum and W. B. Cornell, Baltimore; Diabetes Insipidus, by Thos. B. Futcher, Baltimore; A Case of Prolonged Male Hysteria with Autopsy, by S. Weir Mitchell and Wm. G. Spiller, Philadelphia; Some Unusual Forms of Acute Myelitis, by B. Sachs, New York; Infectious Neuritis with Report of Cases, by Jas. J. Putnam, Boston; The Clinical Features, Prognosis, and Treatment of Cerebrospinal Meningitis in Infants and Children, by Henry Koplik, New York; A Case of Spasmodic Stricture of the Esophagus with Sacculation, Treated by Dilatation, and Later, by Gastrotomy, by James Tyson, Edward Martin and Thos. Evans, Philadelphia; Idiopathic Dilatation of the Esophagus—Cardiospasm, by B. W. Sippy, Chicago; Annual Dinner at the Willard Hotel; A Lantern Slide Demonstration of the Protozoon-like Bodies Found in Scarlet Fever, by F. A. Mallory, Boston; A Lantern Slide Demonstration of Trypanosomes, by Chas. S. Bond, Richmond, Ind.; Election of Members; The Relation of Cells with Eosinophile Granulation to Bacterial Infection, by E. L. Opie, Baltimore; A New Case of Chloroma with Leucemia, with a Study of the Cases Reported since 1893, by Geo. Dock and A. S. Warthin, Ann Arbor; The Neoplasm Theory of Leukemia, with Report of a Case Supporting This View, by A. S. Warthin, Ann Arbor; Types of Splenic Anemia or Splenomegaly, by Alfred Stengel, Philadelphia; On the Cultivation of *Trypanosoma Evansi*, by F. G. Novy, W. J. McNeal and C. B. Hare, Ann Arbor; The Agglutination and Filtration of Trypanosomes, by F. G. Novy and W. J. McNeal, Ann Arbor; Zonal Necrosis of the Liver, by E. L. Opie, Baltimore; Attempts to Produce Liver Necrosis by Venous Injections of Intracellular Bacterial Toxins, by R. M. Pearce and C. K. Winne, Jr., Albany; Exhibition of Specimens of a Malignant Adenoma of the Liver, by Geo. L. Peabody, New York; Rhythmic Lateral Displacement of the Heart as a Sign of Unilateral Pleuritic Exudate, by Chas. L. Greene, St. Paul; Pneumopericardium, with Report of a Case, by W. B. James, New York; Three Cases of Probable Psittacosis, by H. F. Vickery, Boston; Addison's Disease with and without Adrenal Tuberculosis, by C. F. Withington, Boston; Report of a Case of Acromegaly, by Chas. L. Greene, St. Paul; A Study of the Tubercle Bacilli Isolated from Three Cases of Tuberculosis of the Mesenteric Lymph Nodes, by Theobald Smith, Boston; Studies on the Etiology of Variola with Demonstration of Microscopic Preparations, by Wm. T. Howard, Jr., and Roger C. Perkins, Cleveland; Chronic Thrombosis of the Pulmonary Arteries in a Case of Multiple Serosities, Simulating Aneurism of the Thoracic Aorta, by E. F. Cushing, Cleveland; Pneumococcic Arthritis, by S. Solis Cohen, Philadelphia; Pulmonary Actinomycosis, with Report of a Case, by S. Solis Cohen, Philadelphia; Election of Officers and Concluding Business.

"Tonnage" in the Medical Profession.—An editorial in the May *Scribner's* takes for its theme the ideal of an executive in a large metal-refining concern, viz., "tonnage" and its writer applies the statement to the professions, especially that of medicine. He goes on to say, "It is the opinion of one of the oldest medical instructors in our country that the schools of to-day aim to turn out more graduates and better students of medicine than ever before, and that they succeed, but do not turn out as good doctors, on the average, as they did forty years ago." The reporter does not know when or by whom this assertion is made, hence he can have no idea as to the weight of authority back of it. Granting the right of free thought and open expression of opinion, and realizing how much the question of medical education has occupied the attention of those most fitted to speak during the past year or two, one can concede that the above-mentioned "instructor" may be right. At the same time, however, one may assume that he is wrong and base the defense of his propositions upon the results that are being achieved by the more recent graduates. Of course, more graduates and better students do not make up the large percentage of good doctors; for the rightful application of that term recognizes the varied and almost indescribable qualities which such must possess. It is certainly a good thing to have at one's finger tips the theory of medicine, but it is also quite another thing to put those theories into practice; in other words, to be resourceful. Perhaps the apparent difference between the men of to-day and of forty years ago who have gone out to practice medicine is due to the tendency everywhere so manifest to migrate from the country into the city. Forty years since there were fewer and smalled cities and comparatively few doctors ever thought of settling down in a town numbering over five thousand inhabitants. Country doctors are essentially self-reliant, and perhaps that is what was meant by the term "good doctor." There must be all sorts and conditions of men in medicine as elsewhere and it is quite natural that the college-bred and thoroughly equipped young doctor should choose for himself a field in which he might reap the cost of his education as soon as possible, leaving for his less trained though perhaps thoroughly efficient classmate the sparsely settled districts. Speaking of the physician of to-day, the article says: "What he bemoans to-day is the intense prevailing desire for organization. He says that the schools are becoming teaching shops and the instructors teaching machines. The large number of students forces the subdivision and specializing of instruction, and each specialist seeks naturally to magnify his office. The student is passed successively or simultaneously through a certain number of courses which are more and more 'thorough,' but often leave him with an inadequate knowledge of the general facts and principles of his profession. In science as in the social order 'time makes ancient good uncouth.' The proportion of 'good doctors' in the multitude issuing from the modern schools is probably as great as the old schools turned out; the positive number of the less competent is necessarily larger. But the least fitted of these will not do the harm in some ways that the best-trained often, in good faith and ignorance, were wont to do. The 'tonnage' of the profession seems portentiously large, but the one principle that we may be confident works now as surely as it ever did, is the survival of the fittest." Perhaps the "tonnage" is larger than necessary. There are equally good arguments for and against this view, but it seems to the writer that one need scarcely worry about an overproduction of physicians; for in our profession as in every other the law of supply and demand is constant and either factor will adjust itself to keep as nearly perfect a balance as is possible if one can only afford to be patient.

OBITUARY.

Dr. Lorenzo J. Kohnstamm, of New York, forty-four years old, died on Monday last.

Dr. Wilbur F. Nutten, one of the best known medical practitioners of Western New York, is dead at his home in Newark, N. Y., from heart disease,

at the age of sixty-four years. He was a graduate of the College of Physicians and Surgeons of New York.

Dr. Edward Henry Lee, of Chicago, was almost instantly killed last Sunday morning. Dr. Lee was educated in Heidelberg and Vienna. He was also a student at Bonn University and later studied medicine at Würzburg University. He was a surgeon at the Alexian Brother, West Side and Cook County hospitals.

CORRESPONDENCE.

OUR BERLIN LETTER.

Berlin, April 1.

ARRIVAL OF ANGLO-AMERICANS FROM VIENNA—RELATIVE MERITS OF BERLIN AND VIENNA POST-GRADUATE WORK—PROF. ORTH'S ANSWER TO VON BEHRING ON THE QUESTION OF TUBERCULOSIS—THE ANGLO-AMERICAN CLUB—SUCCESSFUL INOCULATION OF SYPHILIS ON ANIMALS OTHER THAN HUMAN BEINGS—PROGRESSIVE METHODS OF THE GERMANS AS REGARDS HOSPITAL CONSTRUCTION.

Owing to the Easter holidays and the coming medical congress in Leipzig the present month will be very quiet, medically speaking. The University is entirely closed, and not only are the large and more important of the University clinics and courses not given, but even the majority of the minor courses, so that it is rather difficult to obtain the work one desires. During the past week there have been a large number of arrivals of Anglo-Americans from Vienna, where the same condition of affairs is present, and which evidently prompted the present pilgrimage to Berlin. Unfortunately, however, they are finding themselves disappointed and many are already wishing themselves back.

With this commingling of students from the great centers of medical learning there has naturally been considerable discussion of the oft mooted question as to the relative merits of Berlin and Vienna as regards post-graduate work. It has always been a matter of the keenest moment to Americans, and is unquestionably the first decision that confronts him when he thinks of studying abroad. There are a large number of Americans in Berlin at present who have been to both places and who are therefore competent to judge, and I have tried to obtain some sort of general consensus of views upon this subject. Like most questions of this nature it seems to be an entirely relative matter. You will find some men condemning the work in some particular branch, while others regard it in the highest esteem, and altogether the opinions are so diverse and varied that it is hard to form them into a good general classification. It seems to be not only a question of the particular line of work sought for, but also, and to a large extent, on the individual temperament and the student's previous training. There are many who will be very well satisfied with a particular course, but which will be regarded as highly unsatisfactory by a more advanced student; and on the other hand there will be a large difference of opinion by two men of equal capabilities otherwise, which depend upon nothing but obscure and subtle differences in individual taste. Judging from the standpoint of choice of subject, however, the consensus of opinion seems to be that in pathology, skin, and diseases of the stomach, and nervous system the opportunities in Berlin are far better than those in Vienna, whereas, on the other hand, Berlin is no match for Vienna in internal medicine, where the keener and more profound methods of the Vienna School come into play. In surgery, bacteriology, children's, ear, laryngological and genito-urinary diseases, the two cities are about equal. These distinctions, however, should not in any way be understood to be hard and fast, because, for instance you can undoubtedly get excellent courses in pathology in Vienna, and on the other hand, some of the internal medical work in Berlin will prove very satisfactory. They only intend to express a general average, and if one intends to get the most of his time in the course of his work in Europe, it will pay him best by going to both places and absorb the best essences from both.

Virchow has not been dead quite two years and although it cannot be said that he is sadly missed, nevertheless you hear every once in a while expressions of fond remembrance which the present régime will probably not recall. Nobody denies that his successor, Orth, is a very competent man and probably the best pathologist in Europe; nevertheless the difference between the personalities of "The Founder of Modern Pathology" and his successor is striking. Virchow was a genial old soul and bore himself with a quiet dignity that is in strong contrast to the gruff, abrupt and distant nature of Orth. There was an intimacy between master and pupil in Virchow's time that makes the deadly fear in which the assistants regard their chief at the present time quite amusing. It is evident that he is ruling things with an iron hand and gives very little opportunity for the play of any sentiment. Even the medical fraternity of Berlin have a wholesome fear of the pathologist, for they regard him as a deadly antagonist in debate. It is conceded by all that he is one of the best masters of medical polemics that Berlin has seen, and his answer to von Behring some weeks ago at the "Gesellschaft" on the question of tuberculosis, is still being spoken of as one of the masterpieces of medical debate. Backed by his enormous knowledge and his keen critical insight, combined with a clear diction and forceful delivery, he is an unmerciful antagonist and woe to him who meets his ire. Curiously enough, the only man in Berlin who has the happy distinction of being in any way a rival of Orth is a "horse-doctor," the pathologist of the veterinary school, a man of most profound learning and an excellent debater.

The Anglo-American Club is still in existence, and what is more, prospering far beyond the expectations of its founders. The general plan of the meetings has been changed from those heretofore, and instead of hearing papers written by the members, there is an invited guest at each meeting, some distinguished medical man from Berlin, who holds a "Vortrag" on some topic of general interest. It was found that interest in the society slackened under the original scheme, whereas at present the weekly meetings are looked forward to. It is not difficult, as was originally thought, to get the highest "talent" to come, and nobody who has been invited has yet refused the invitation. Thus far some of the most distinguished personages in Berlin have been present, among whom may be mentioned, Ewald, Olshausen, Grawitz, Israel, Wasserman, Peck, etc. We have been very fortunate also in having the opportunity to hear two of our best known Americans as well: Prof. Scripture, of Yale, and Prof. Simon Flexner, Director of the Rockefeller Institute. Prof. Scripture gave a most interesting and fascinating demonstration and lecture on "Experimental Phonetics." The night of his lecture was made into a kind of gala occasion, and the club invited many distinguished laymen, among whom may be mentioned the Consul-General of Berlin, Mr. Mason, and some professors from the Academic and medical university. Prof. Flexner, who incidentally is working in Prof. Salkowski's laboratory, lectured on the "Etiology and Treatment of Dysentery" and gave an excellent résumé of the im-

portant work done by himself and his coworkers on this subject. He was elected subsequently as the first honorary member of the Anglo-American Medical Club of Berlin. At the last meeting the surgeon Israel spoke on the "Surgical Treatment of Nephritis." The best part of the lecture dealt with an analysis of Edebohls' work and his statistics. He tried to show that even according to Edebohls' own published records the latter had failed to cure one case of chronic Bright's Disease, and he claims that the reported cures are simply those where the nephritis was combined with a movable kidney. He also reported six cases of his own with one death and no cures.

Up to the present the inoculation of syphilis on animals other than human beings has been entirely futile. It may be of interest to know that this has finally been accomplished by Lassar, who announced some weeks ago at the Berliner medicinische Gesellschaft the successful inoculation of a chimpanzee. After the regular period of incubation, typical lesions presented themselves, which were confirmed by microscopical examination. Since then he has successfully inoculated another chimpanzee, and the dead specimen was presented at the society two weeks ago. It showed typical macules and papules and other undoubted specific lesions all over the body and especially on the soles and feet.

The progressive methods of the Germans as regards hospital construction is again exemplified in the new Charlottenburg Krankenhaus which is rapidly nearing completion and which will be opened very shortly. Prof. Grawitz conducted a party of American students through the different buildings a number of weeks ago. It is built on the most elevated part of Charlottenburg, affording a delightful view of the surrounding country. It is constructed on the pavilion system, the separate buildings being connected by corridors and naturally with the aid of the most modern methods of hospital construction. The whole covers an extensive plot of ground and will have a capacity of about 800 beds.

THE CORONER'S BILL.

To the Editor of the Medical News.

Dear Sir: The so-called Coroner's Bill has passed the legislature and is now before the Mayor of Greater New York for his signature. If the physicians of Greater New York would write a personal letter to the Mayor in favor of Senator Elsberg's Coroner's Bill it would greatly help the Committee on Legislation to place this important bill upon the statute books of this State.

This bill had its origin in the New York County Medical Association, which has agitated the subject independently and in association with other medical bodies in Greater New York for many years, and finally a joint committee, representing the counties of New York and Kings, of which Prof. Stephen Smith, M.D., was chairman, and with the aid of Mr. James Taylor Lewis, Counselor of the New York State Medical Association prepared the draft of a bill which with some modification is the bill introduced in the legislature by Senator Elsberg. The Committee examined the system of verifying deaths in Massachusetts and many other States and foreign countries and concluded to recommend that the office of Coroner with its jury in Greater New York be abolished and the duties connected therewith be transferred to already existing departments of the city government, namely, judicial duties to the city magistrates, the medical duties to the Department of Health, the civil duties to the City Chamberlain and the legal duties to the District Attorney.

The office of Coroner in the City of New York is the butt of the paragrapher, the subject of ridicule by the press and is little respected by the community at large and the reason therefor seems to me to be in the fact that the Coroner exercises with his jury extraordinary authority and fills many offices so that there is no man to be found to-day with such power of mind and versatility of talent who can as Coroner sit upon the bench as a judge, deciding the kind of evidence which shall be submitted to his jury, who leaves the bench to go to any place to take the ante-mortem statement of some poor injured mortal, and, in case of death, to decide its cause, incorporating in his decision the latest researches in chemistry, biology and pathology and yet only one of the eleven Coroners of the City of New York is a lawyer.

The Coroner adds another terror to sudden death in the City of New York, for if he suspects suicide then Section 775 of the Code of Criminal Procedure commands that his jury must be present while the inspection of the body is being made. The Coroner is higher than the sheriff and replevins merchandise from him in civil suits. The Coroner's system in the City of New York is a relic of bygone ages and has outlived its usefulness. In analyzing the so-called Coroner's Bill we can understand how the several existing departments of the city government can do with a great saving of the city's money the work of the Coroner's office much more satisfactorily than it has been done heretofore. The bill transfers the judicial functions of the office of Coroner to the present city magistrates, whose duties are not mixed but essentially those of judges, and the legal duties attending the inquest will be conducted by the District Attorney, in a magistrate's court, and will have the character and dignity which befits proceedings always of a solemn import to parties immediately concerned and often of far-reaching influence upon the welfare of the community in which the suspected crime was committed. The civil duties, such as replevining merchandise from the sheriff, are transferred by the proposed bill to the City Chamberlain, an officer of the city government who is in every way qualified for the responsibility imposed upon him. The medical duties are transferred to a bureau to be created in the Department of Health, with medical examiners who will act under a chief who shall be a skilled and practical pathologist and who shall have practised his profession in this State for five years and at least three of which shall have been spent in laboratory work in pathology and bacteriology. The Department of Health will assume all of the duties connected with investigating the cause of death, bringing to its aid well-equipped chemical and biological laboratories, conducted by expert scientists. The researches in these laboratories have received honorable mention in the great medical congresses of the world and the practical results have stimulated other cities to copy its admirable work. And it now remains for the Mayor and the Governor to give the City of New York the much-needed relief from its inadequate Coroner's system.

Yours very truly,

E. Eliot Harris,
Chairman, Committee on Legislation.

An Improvement on the Air-cushion in Surgery.—It is so important to get a good view of the field of work that any method which serves to aid in bringing the posterior portion of the retro-abdominal wall nearer to the surface is of value. Here we use, especially for operations on the kidney, various forms of cushions. G. Kelling (Zntrlbl. f. Chir., Jan. 30, 1904) illustrates an admirable addition to the ordinary operating table. It consists simply of a cross-bar which passes beneath the midtrunk region.

SPECIAL ARTICLE.

PHYSICAL CHEMISTRY VERSUS BIOLOGY IN THE DOCTRINES OF IMMUNITY.*

BY PROFESSOR PAUL EHRLICH, M.D., LL.D.,
OF FRANKFORT-A.-M., GERMANY.

Prof. Ehrlich devoted himself mainly in this lecture to a discussion, polemical in character, of the physicochemical investigations of Arrhenius and Madsen, the Danish physicists. They applied the methods of physical chemistry to the study of toxins and antitoxins and one of their beliefs is, that tetanolysin is a uniform substance possessing only a weak affinity to its antitoxin and that its neutralization occurs in accordance with the law of Guldberg and Waage. His own doctrine of the pleurality of toxic constituents was discussed in connection with the assertions of these observers and then he alluded to the fact that their views only met with a favorable reception in certain scientific circles which lacked special competence in serotherapeutical questions. Ehrlich protested against the attempts of these authors to claim exclusive priority in the development of these questions, for the method of partial neutralization of toxins followed by them was opened and developed by himself. Equally unwarranted is the reproach that his (Ehrlich's) investigations are inaccurate and have been conducted without sufficient regard for possible sources of error. His most important results have been confirmed by A. and M., especially as regards the existence of toxoids and their occurrence with varying degrees of avidity. Neither will he admit that he has used the simplest possible explanations although he always began with the simplest, and as in the case of diphtheria toxin, substituted more complex ones only when the experimental results made this necessary. The contention, moreover, that his investigations represent merely an application of Thomson's principles in his studies of affinities between strong acids and bases is incorrect, because the latter worked with material substances only.

Ehrlich next took up the points of departure between his methods and those of other investigators. In the first place it was to be determined whether in the production of toxoids a change in avidity for antitoxin occurred. The only available method for this was that of partial saturation or neutralization, which was defined in detail. If the toxin were a single substance of uniform composition and the antitoxin possessed for it a strong affinity, like that between hydrochloric acid and potassium, the quantities of toxin which disappear or are neutralized in these mixtures, would be in direct ratio to the quantity of added antitoxin. In fact the process of neutralization takes place in a different manner which was illustrated by a series of diagrams, in which the experimental results were presented in graphic form. The first, designated by Ehrlich as the spectral mode of representation, shows step by step the extent of diminution in the number of toxic doses effected by a definite small quantity of antitoxin. Another method, the "linear," employed by Arrhenius, is mathematical in character, and in it the quantities of antitoxin added are represented on the abscissa and those of the active toxic doses present on the ordinates. Ehrlich does not consider that this method has any advantage over the former and is objectionable because the graphic line corresponds only in its middle part with the values actually found, and toward the beginning and ends shows considerable deviation.

The interpretation of the phenomena of neutralization was next considered and it was shown that three different zones can be distinguished in the spectral mode of representation. In the first zone one combining unit of antitoxin removes on the average either one-half or one entire lethal dose. As there is reason to assume that in the case of an ideal, absolutely pure toxin one combining unit removes exactly one lethal dose, the foregoing result indicates that in this zone pure toxoid, or pure toxin, or a mixture of equal parts of toxin and toxoid, designated by Ehrlich as hemitoxin, is neutralized. The existence of hemitoxin is possible only in case the toxoid has precisely the same avidity as the toxin, and from this it follows that, as assumed from the beginning and moreover confirmed by Arrhenius, in the transformation of toxin into toxoid, no change in avidity occurs. Pure toxoid occurs often in the form of a prototoxoid, which possesses a stronger avidity for antitoxin than all other components of the toxin and thus manifests its presence that to the solution of toxin containing it a certain quantity of antitoxin can be added without lessening in the slightest degree the toxicity. The existence of prototoxoids is denied by Arrhenius, but the criticism is not applicable because the substance has been repeatedly tested and prototoxoids have also been positively demonstrated in the case of other poisons and analogous substances, ferments and agglutinins.

The second zone in the spectrum is of relatively short extent and is characterized by the fact that one combining unit removes only a fraction of the lethal dose. This is the zone of decisive significance for the hypothesis advanced by Arrhenius. The third zone is called by Ehrlich the toxone zone. The toxone is one of the primary products of secretion of the diphtheria bacillus, possessing the same haptophore group as the toxin, but of far less avidity, and entering in the process of partial neutralization therefore last into combination with antitoxin. Its toxophore group differs from that of toxin, being incapable of producing acute effects, such as cutaneous necrosis and death. Toxone is responsible for the diphtheritic paralysis occurring in guinea-pigs between fourteen and thirty days.

An extended discussion then followed in which Ehrlich attempted to refute the objections advanced by the physicochemical school against his theories. Arrhenius concluded from his experiments in neutralization of ammonia by boric acid, that inasmuch as the neutralization of tetanus-toxin proceeds in the same way it is superfluous to assume the existence of different components and sufficient to assume a single uniform toxin with weak affinity for its antitoxin. In reply Ehrlich stated that at the outset of his investigations he was led to assume a strong affinity between toxin and antitoxin. This opinion was supported by the experiments of Dönitz and Heymann, who demonstrated the extraordinary rapidity with which diphtheria toxin introduced into the circulation combines with the toxophile receptors in the tissues. It must therefore possess a high degree of avidity. The protective and curative properties of the serum indicate that the antitoxins possess at least as strong an avidity as the tissue receptors. Furthermore the therapeutic experiments of Dönitz in animals and of Madsen on red cells prove that the antitoxin when once bound, becomes so firmly fixed that the specific serum fails after a time to produce any curative effect. This indicates that after fixation of the toxin, secondary chemical modifications transform the primary labile combination into a stable one. Ehrlich was finally able to show that toxin and antitoxin unite with great avidity, and that certain variations which occur with different specimens of toxins could be referred to the presence of toxone.

The evidence which Arrhenius advanced to account for the assumption that toxin and antitoxin are actually

* Second Herter Lecture, delivered at Johns Hopkins University, Medical Department, April 13, 1904.

substances of weak avidity, was then discussed. He commented on the fact that biological data which speak against this view are either entirely ignored or set aside under arbitrary assumptions of an inexact investigation. The sole support advanced is the tetanus curve. The entire calculations of these authors proceed from the assumption that neutralization of toxin and antitoxin is an interchangeable or reversible reaction. If it can be shown that the process is not a reversible one, then the basis is withdrawn from all the reckonings and deductions of Arrhenius. No experiments have been made on this point by Arrhenius himself, but v. Dungern has taken up the subject by applying the procedure used by Danysz for other purposes, of successive additions of toxin to antitoxin. The conclusions to be derived from these experiments are that the union of diphtheria toxin and antitoxin does not proceed in accordance with the ammonia and boric acid scheme. The observed phenomena of combination are explicable only upon the assumption of a complex constitution of the diphtheria poison. The facts find their best explanation in the action of a toxone and an epitoxonoid, and the immunizing action of apparently neutralized toxins can thereby be explained. Constituents of the diphtheria with weak affinity after combining with antitoxin may eventually become so firmly bound that this union can only be incompletely broken by toxin of stronger avidity.

Prof. Ehrlich then referred to the experiments of a similar nature made by Dr. Sachs at his suggestion, with tetanolysin. For the latter which is the basis of the investigations of Arrhenius, it was found that similar statements could be applied and therefore that the premises underlying his entire calculations and constructions of graphic curves are inapplicable. The linear representations of the calculated values of toxins as demanded by Arrhenius for all cases, must be rejected whenever the phenomena above noted are present. Allusion was then made to the fact that from the purely physicochemical point of view, the conceptions of the authors presented numerous vulnerable points which would soon be exposed by competent authority. A few opposing arguments of a biological nature were then considered, beginning with tetanus. Tetanolysin on account of its property of decomposing quickly and the difficulty of conducting hemolytic experiments with absolute accuracy, is ill adapted for precise determinations of the kind under consideration. As the lecturer graphically described it, neutralization experiments with this substance encounter on the one side the Scylla of incomplete union and on the other the Charybdis of destruction of the poison. It does not seem comprehensible that the calculations should be based on the assumption that the toxin consists of molecules of poison with uniform composition. On the contrary it is highly probable that specific toxoids are present, which must enter into the calculations as well as the toxins. The amount of toxoid was unknown and is at present indeterminable. To escape from this dilemma, Arrhenius assumes that the production of toxoid results from an equable weakening of all the toxic molecules. Thus the toxic solution would not be a mixture of dissimilar components. This assumption must be rejected on general grounds and is disproven by the demonstration of prototoxoids, as well as by the investigations of Tarobi on ricintoxoids. A number of other objections were also discussed and to meet these, Ehrlich claimed that Arrhenius had scarcely anything of a positive character to offer, except his tetanolysin table, which corresponds fully with the theoretical calculation. It should be emphasized, however, that this favorable result was secured only once in comparison with a large number of failures. What adds to the skepticism is the fact that both of Madsen's diphtheria curves, which were published in refutation of Ehrlich's conceptions, have since been shown to be erroneous. At present there are no satisfactorily demonstrated facts which warrant the application of Arrhenius' conceptions to the diphtheria toxin. The large variations of the dissociation-constants, as determined by the calculation, necessitate the assumption of an extraordinary multiplicity of poisons, whereas Ehrlich's conceptions are satisfied with the conception of a much smaller number.

In concluding this lecture he claimed that his views furnished a far better explanation than those of Arrhenius of numerous facts in the domain of toxins. These include the process of spontaneous enfeeblement of toxins, their passage into a state of stability, the reduction of the toxone zone, and the capacity of completely neutralized poisons to produce antitoxin by means of epitoxonoids. He ended with the conviction that what he had established through long years of work concerning the nature of the diphtheria poison would in the course of time prove itself real and vital.

SOCIETY PROCEEDINGS.

HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

Regular Monthly Meeting, held Saturday, February 27, 1904.

The President, Augustus S. Knight, M.D., in the Chair.

Complete Removal of the Penis.—Dr. Spooner presented a patient from whom the entire penis had been removed because of cancerous disease some three weeks before the meeting. The specimen of cancer was also presented. Notwithstanding the removal of the organ, the patient is able to hold his water perfectly. In answer to a question, Dr. Spooner replied that the muscles involved in holding the urine are the circular fibers at the opening of the urethra and that these are not interfered with by the operation. They constitute the so-called internal sphincter of the bladder and are composed of involuntary muscle fibers. Some voluntary muscle fibers, however, are found along the urethra in the perineal portion, and these of course remain untouched. Hence enuresis does not follow. This compresser urethra muscle is a portion of the levator muscle and effects the purpose of an ailing patient to hold his urine very well, yet gives him control over the evacuation of his bladder a few times.

Rupture of the Intestines.—Dr. Flint presented a case in which, as the result of a blow on the abdomen, severe rupture of the upper part of the small intestine near the beginning of the ileum had occurred. Notwithstanding the usually hopeless outlook of these cases, the patient was operated upon successfully. Within three hours after the accident had happened the ruptured places were sutured, the abdomen thoroughly flushed out and the patient recovered without any serious complication or delay.

In discussing Dr. Flint's case Dr. Putnam said that he had recently operated upon a fireman who had suffered from rupture of the ileum almost at the same part evidently as that in which Dr. Flint's patient had been injured. In this case the result was fatal. At first the patient refused operation, and when, after forty-eight hours, the operation was permitted, he was already in the throes of death from peritonitis and died from shock. In this case the intestines seemed to have been filled with air and to have ruptured somewhat like a paper bag, when by the force of the blow they were driven against the spinal column.

Obscure Stricture of Esophagus.—Dr. F. N. Wilson reported a case in which for several days a child

vomited every particle of food that was given it. This food was vomited in such a way that it had evidently never reached the stomach and a stricture of the esophagus was found to be present. The interesting feature of the case was the absence of history pointing to any possible etiology of the stricture. The child had suffered from scarlet fever some months before and this had evidently been of very severe character, since the little one had been in bed for six weeks. The little one had become so much run down for lack of food that when an operation for the dilatation of the stricture was attempted it died before proper dilatation could be accomplished. The stricture was about 8 cm. from the teeth and there was absolutely no history of irritant materials having been swallowed or any trauma that might have occasioned the stricture which was found to exist after death. There was very little fibrous material associated with it, as could be seen from the specimen which was exhibited. Dr. Frank Daniels said that the stricture was evidently connected with the attack of scarlet fever, since only under very special complications were children in bed for so long as six weeks with this disease. It is difficult, however, to say just what the process which brought it about would be, though as secondary infections are quite common with scarlet fever, the possibility of such a complication with scarlet fever is easy to understand.

Sarcoma Treated by Toxins.—Dr. William B. Coley presented a patient who had suffered some three years ago from a round-celled sarcoma of the dorsal spine. At the time he came under observation he was about twenty years of age. The tumor was of enormous size involving several of the lower dorsal and some of the upper lumbar vertebræ. The patient had lost about fifty pounds in weight. During the growth of the tumor so much pressure had been exerted upon the spinal cord that not only was the patient confined to his bed, but there was total paralysis of the lower extremities as well as of the bladder and rectum. Just before he came under observation the patient was so weak that he was unable to turn over in bed. The diagnosis of sarcoma had been made by Dr. Virgil P. Gibney who called on Dr. Coley to administer the toxins at the Montefiore Home just two years ago. Before the administration of the toxins a small portion of the tumor was removed and the diagnosis of round-celled sarcoma made from the very typical clinical history of the case, which was confirmed by Dr. Harlow Brooks, a pathologist at Bellevue Hospital.

Details of Treatment.—About four drops of the mixed toxins of the bacillus of erysipelas and *Bacillus prodigiosus* were given daily. A temperature of 103 to 104° F. developed after each injection. Almost at once the patient began to show improvement, especially in his general condition, and the local signs, by lessening of the size of the tumor, also improved. Six months after the injections were begun he was able to be around on crutches. In November he was shown before the New York Surgical Society and had regained nearly all the weight that he had lost besides recovering almost completely the use of his limbs, so that he was able to walk very well with the aid of a cane. Last February, one year after treatment had begun, he was able to walk perfectly without support of any kind and his general health had improved to such a degree that he was able to resume his former occupation. Dr. Coley considers this to be one of the most remarkable results ever obtained from the use of the toxines. Of the diagnosis in the case there can be no doubt, since specimens from the tumor were examined by thoroughly competent pathologists and some of these specimens are still to be seen by those who might have any possible doubt about the nature of the affection.

Other Favorable Results.—Dr. Theodore Dunham said that the patient presented by Dr. Coley was the most remarkable one that he had seen with the exception of a patient under the care of Dr. Ahlbe some time ago which seemed absolutely hopeless. The growth was an enormous tumor on the side of the head. The toxins when administered produced a decided reaction and the growth of the tumor, which had been very rapid before, stopped at once. Before long the tumor began to reduce in size and then practically disappeared. Dr. Dunham has seen the child several times since, and the cure seems to be enduring.

Dr. Dowd said that while the toxins did not succeed in all cases, he had seen some remarkable results that had been thus obtained and he considered that further observations along this line should be made, especially in the severest cases, in order to obtain further data as to the value of this method of treatment.

Relief of Paralysis.—Dr. Frank Daniels said almost more surprising than the cure of the tumor itself was the complete restoration to the patient of the use of his limbs and his urinary and rectal functions after five months of pressure paralysis with involvement of both bladder and rectum. Usually it is considered that in this length of time some degeneration will have taken place in the nervous fibers of the cord, and the present excellent condition of the patient is therefore a subject for congratulation and the source of the greatest encouragement as regards the possibilities of these cases to get well.

Inhibitory Action of Toxins.—Dr. Coley said that in very many cases of sarcoma the mixed toxins of erysipelas and of the *Bacillus prodigiosus* produce a distinct inhibitory action upon the further cellular growth of the neoplasm. In some cases, however, this inhibitory action is not quite equal to the new growth of the tumor, and consequently the toxins fail to give relief. When the malignant neoplasm is extremely active the toxins therefore may prove unavailing. In most cases, however, the toxins inhibit the growth of the tumor for a time at least. In not a few cases this inhibitory action is so marked that the tumor begins to grow less in size at once and as the general condition of the patient is dependent apparently upon toxins absorbed from the neoplastic cells, this soon begins to improve. There can be no doubt now, in the mind of any one who has followed cases of sarcomata treated by the toxins, that they are wonderfully curative under favorable conditions. Dr. Coley has now had twenty-four cases which have been well from two to ten years. Sixteen of these cases have been well from five to ten years. One died of local recurrence at the end of eight years. One of local recurrence after two and a half years, and one of abdominal metastases after having remained well for over three years.

Treatment of Cicatricial Esophageal Stricture.—Dr. Theodore Dunham said that he suggested some years ago, in a paper read before the Harvard Society, certain methods of securing the passage of a thread through an esophageal stricture for the purpose of having instruments, guides and the like find their way through tightly closed strictures of the esophageal wall. As is well understood, it is important to reduce the danger always present in operations for dilatation of the esophagus by the passage of a guide from either side, that is, whether the stricture is to be dilated from above downward, or from the stomach upward. It is not always possible, however, to pass even a flexible guide through the tortuous strictures that exist in the

esophagus. If, however, fluid can find its way through the stricture, Dr. Dunham has shown that a thread may readily be washed through even the smallest strictures and then as gastrostomy is done, the thread may be used to draw a larger piece of cord or a piece of rubber tubing that may aid in the dilatation of the stricture, or may be useful in many ways in facilitating further operative procedures looking to the relief of the patient by making the stricture passable.

Thread Through Nostril.—In cases in which the patient is for instance a young child and the tongue prevents the passage of the thread, or where in adults a certain nervousness causes the tongue to interfere with its passage, the thread may be washed through the nostril. This Dr. Dunham tried first on himself and found that it was not accompanied by any serious discomfort and he now uses it, confident of success, where sometimes before much time was wasted in getting the thread through the mouth. The most important element in having the thread flow properly through the tube, is to have it as far as possible, perfectly straight. No slack must be allowed, and the flow of the thread must be checked every few moments in order to prevent any snarling. Others who have tried to wash threads through narrow strictures have been of the opinion that if some small heavier object were placed at the end of the thread it would be carried along more readily by the stream of water. This is not true. The more flimsy the thread the better does it flow in narrowing tubes, and the better is it kept in the center of the stream where movement is most rapid and there is least likelihood of its movement being interfered with.

Cord as Dilator.—Once a small string has been passed through a tight stricture, it may be hooked out of the stomach through the gastrostomy opening with a bent probe. A larger cord may then be drawn down, and, adopting the suggestion of Dr. Agbey, this cord may be used by means of a saw motion to affect an enlargement of the path through the stricture. Cutting with the cord thus, seems to be reasonably safe. The mouth and the gastrostomy opening have to be protected while the sewing is done by means of bent, grooved, metallic instruments in order to avoid the occurrence of unnecessary lesions. Besides the cord, an olive pointed instrument may be drawn through the stricture thus further dilating it. Dr. Dunham has had a series of olives made in order to secure gradual dilatation. At times Dr. Dunham has found that the drawing of a piece of tubing, which is put on the stretch, through the stricture, and then allowed to become thicker by its elasticity after it is in place, will affect a very gradual dilatation of the stricture, though not infrequently it will be found that this does not remain in place, but is gradually worked out by movements of the tissues.

Illustrative Cases.—Dr. Dunham reported a series of illustrative cases, two of them operated upon by himself, and some seven others reported to him by other surgeons who have found his methods very useful in securing the dilatation of esophageal strictures. In the first case in which he found the washing of a thread into the stomach the only possible means of securing dilatation of the stricture, he failed on three separate occasions to find the cardiac orifice of the esophagus to go through a gastrostomy wound in spite of the most careful search. In this case from neglect the dilated stricture became closed up once more and the patient refused to drink the water necessary to secure the passage of the thread into the stomach. It was then that Dr. Dunham, after having first tried it through his own nose, succeeded in washing the thread into the stomach by means of the tube passed along the floor of the nostril. Dr. Dunham has found that while at first it seemed more advisable to do the operation without an anesthetic, anesthesia is preferable, for the manipulations are very painful and the operator is apt to be discouraged by the complaints of the patient from accomplishing such an amount of dilatation as will really prove effective in lessening the symptoms present in the case.

Points in Technic.—Dr. George Brewer said that no operation is more trying to the surgeon than dilatation of a tight esophageal stricture. One of the most serious difficulties with regard to the passage of sounds through a stricture is that where there has been a decided narrowing of the esophageal lumen for a considerable period there is almost sure to be a diverticulum of the esophagus formed just above it. If sounds are passed then they will almost inevitably find their way into this diverticulum and the use of any force to pass sounds will surely lead to fatal results by perforation of the diverticulum with infection of the thoracic tissues. Hence the necessity so often for dilatation from below. Where the stricture is very tight, however, and close to the cardiac orifice, it is often a difficult matter to secure the entrance of instruments. Dr. Dunham's method of passing a thread then, is extremely helpful and saves a very difficult and almost impossible situation. Instead of using grooved pieces of metal to protect the soft parts, when a cord is employed with a sawing motion to enlarge the stricture, Dr. Brewer has found that a large, long spatula makes a better guard for the mouth, at least. It must not be forgotten that several strictures may exist in the esophagus and Dr. Brewer on one occasion had the olive-pointed tip of an instrument catch on the shoulder of a stricture through which it had passed and remain below the strictures some 15 cm. from the teeth imprisoned between two strictures. It was hard to know what would be necessary in order to secure its removal. A thoracotomy from behind was thought of, or the possibility of securing it by operating from the cardiac end of the stomach. Dr. Brewer succeeded, however, in making a cup-shaped snare which caught the olive and carried it with it in its course between the strictures.

Element of Spasm.—Dr. Dowd said that the element of spasm in esophageal strictures must never be forgotten. It not infrequently happens that when the specimens are obtained from a case of serious stricture of the esophagus, they are found not to contain much fibrous tissue, nor to have been especially thick and tight. It is evident in these cases that the irritability of the muscles near the point of stricture easily set up spasm and that this shuts up the narrowed lumen of the esophagus completely, though there was actually not a stoppage effected by the stricture itself. Hence the story so often seen on hospital sheets with regard to patients suffering from stricture of the esophagus not being capable of permitting the passage of a sound on the first day, and yet allowing it to pass easily afterward.

Technical Details.—Dr. Putnam said that the passage of the thread required attention to details. A little water was better than much. The thread has to be kept well on the stretch and the operator must remember that just when he is sure that the thread is down a gush of water may bring it out once more.

Dr. Brewer said that in one patient in whom he had attempted to pass the thread, the patient did not care to try to swallow it in the usual way with water, but taking a mass of thread he chewed and swallowed it, and actually succeeded in getting portions of it into the stomach.

Treatment of Spasm of the Esophagus.—Dr. Egbert Grandin said that for the treatment of a spasm of the intestines atropine or hydrobromate of hyoscine were

very effective. In the cases after operation within the abdomen when paresis of the gut occurs, these remedies, if given to their physiological effects, often give good results. It would seem worth while then to employ them as tests of the existence of spasm in these cases so as to be sure that there is real pathological condition as well as the spasm present.

NORTHWESTERN BRANCH OF THE PHILADELPHIA COUNTY MEDICAL SOCIETY.

Regular Monthly Meeting, held March 10, 1904.

The President, Samuel Wolfe, M.D., in the Chair.

A GENITO-URINARY SYMPOSIUM.

The Local Treatment of Gonorrheic Infections.—Dr. H. R. Loux read this paper. He stated that, although a continuous service of eleven years in one of the largest genito-urinary clinics in America had afforded him unusual opportunities for observation, he had never written a paper upon the treatment of gonorrhea, because no method heretofore suggested proved, upon prolonged trial, to be an advance worthy of commendation. Clinical observation in thousands of cases convinced him that gonorrhea is too often grossly mistreated. He deprecated the use of strong, irritating injections because they aggravate the disease and damage the urethra, and stated that treatment of acute anterior urethritis by irrigation is to be condemned because it causes an extension of the disease by continuity; he quoted statistics, reasons and authoritative statements to show that these opinions represented the beliefs of the leading and most conservative genito-urinary surgeons. The speaker stated that during the past year and a half the results at his clinic at the Jefferson Hospital and in private practice, had been much better than ever before; this statement he based upon the observation of several thousand cases of gonorrhea at all stages. The reasons for this improvement he ascribed to careful local treatment in which he abandoned, absolutely, the use of any drug as an injection which can cause the slighest irritation. Dr. Loux stated that, in a general way, his methods of treatment were as follows: For acute gonorrhea, he prescribed light diet, with very little meat, no fats, fruit or alcoholic beverages, but allows as much skimmed milk as the patient can drink. If the infection is confined to the anterior urethra, he prescribed the injection of two drams of a ten per cent. solution of argyrol, held in the urethra ten minutes; this injection is made in the morning, at noon and at night. Internally, he prescribes capsules of copaiba, cubebs and sandalwood three times daily. This treatment is practised for one week, during which time the discharge will almost if not entirely cease, there will be no pain or irritation by the injection or upon urination, and the gonococci will disappear. If, at the end of one week, the urine remains continuously shreddy, a weak solution of astringents is employed and of these drugs he preferred zinc sulphate, iodide, chloride, hydrastin or berberine muriate, but emphasized that these astringents should not be used during the first week of the disease and never in solutions sufficiently strong to produce pain or irritation. If the two glass test shows cloudy first and second portions of the urine, showing the presence of anteroposterior urethritis, he irrigates the anterior urethra with a warm solution of boracic acid in order to remove the accumulated secretions. Then he makes deep instillations of twenty per cent. argyrol solutions once daily or on alternate days; the inflammation of the anterior urethra is treated in the manner already described. The writer quoted from statistics of 400 cases treated since July, 1902, by the methods described and stated the advantages as follows: simplicity; the relief afforded the patient from pain and irritation; the extreme rarity of complications; shortened duration of diseases, in that an average time required for cure in acute cases was twenty-one days, whereas by the older methods practised at the clinic and in private work, the best average obtainable was forty-two days.

Dr. Loux then discussed the treatment of gonorrhea in the female, the methods of which are best described by an illustrative case: A. G., aged twenty-one years, came under observation June 5, with acute vaginitis, endometritis and urethritis for which she had been under treatment in New York for one week. Typical symptoms of gonorrhea were present; microscopical examination positive. The vagina was dilated to full extent by means of speculum. To every portion of the vaginal mucous membrane a 50 per cent. argyrol solution was applied, and the same to the urethra by means of a cotton-tipped probe. The interior of the uterus was then freed of accumulated secretions by means of a cotton-wrapped applicator, after which the 50 per cent. argyrol solution was applied to the cervix and the body of the uterus. These applications are repeated two or three times, so as to fill the uterine cavity with the solution. This local treatment was carried out every second or third day. After eight days no gonococci could be found. For home treatment the patient was ordered vaginal douches of from 2 to 4 quarts of hot boracic or normal salt solutions taken in the recumbent posture. On June 20, there was no discharge or other symptoms of gonorrhea and the patient was discharged. On June 29 she was attacked with acute appendicitis, for which he operated and removed a sloughing appendix. For the subsequent five weeks, during which she was in bed in the hospital recovering from the operation, he made observations every few days of her genito-urinary organs and there was no symptoms of gonorrhea. The patient made an uninterrupted recovery and left the hospital. In discussing chronic conditions which result from a neglected or improperly treated gonorrhea, Dr. Loux stated that care should be exercised in adapting methods and means to avoid irritating the already damaged urethral structures. He emphasized the necessity of making routine use of the endoscope and determine its nature. Chronic follicular urethritis is readily recognized by endoscopic examination and by palpation of the enlarged follicles over a bougie, and is treated by gradual dilatation of the urethra by means of bougies, massage of the enlarged follicles, and by the local application of 25 to 50 per cent. argyrol solution to the individual enlarged follicles as revealed by the endoscope. This treatment is carried out three or four times a week and is by far the most satisfactory method he had ever found. Most cases of chronic gleet are due to ulcerative conditions of the urethra and in the management of these the endoscope is indispensable. After determining the exact location of the individual ulcerations the method of treatment depends upon whether the ulcerations are sharply localized or whether there is a coexistent general hyperemia of the urethra. In the former case, applications of 50 per cent. argyrol solution (through the endoscopic tube) to the ulcerations should be made at least three times a week. If general hyperemia exists, the use of mild astringents should precede the topical application of argyrol, in order to rid the urethra of the mucopurulent accumulations. From four to six weeks of this treatment, with care in the use of instruments, will heal the ulcerations and cure the gleet in the large majority of cases.

Another very common condition is the reduction in the lumen of the urethra by inflammatory exudate, occasioned by repeated attacks of gonorrhea or a primary case of long duration. In these cases, endoscopic examination shows the seat of beginning stricture and the presence of more or less localized inflammation. The management of these cases is extremely important because of the certainty of the occurrence of organic stricture unless the patient agrees to a several weeks' course of treatment. He should report every third or fourth day for the passage of bougies of gradually increasing sizes, followed, if active inflammation exists, by the deep instillation or topical application of 25 per cent. argyrol solution, depending upon whether the inflammation is circumscribed or more or less diffuse.

Dr. Loux summarized his paper as follows: Concerning acute gonorrhea, (1) he would strongly deprecate the treatment of acute anterior urethritis by means of irrigation, because of the danger of spreading the disease to the posterior urethra; (2) irritating injections of any kind should never be used in acute gonorrhea because of the certainty of occurrence of a mixed infection and the extension of the disease, by contiguity, to the urethral follicles; (3) argyrol, as a non-irritating gonocide, with a specific effect in allaying the symptoms of inflammation, is the drug of choice for injection, and may be used in any strength and at any stage of the disease; (4) astringents, such as zinc, hydrastin, bismuth and lead, should never be used in the acute stage of gonorrhea, but should be reserved for the post-gonococcus period when the urine remains shreddy; (5) these astringents should not be used in sufficient strength to cause the patient to experience pain or irritation. Concerning chronic gonorrhea: (1) Endoscopic diagnosis and treatment are indispensable as a routine measure; (2) silver nitrate or other caustic or irritating applications or instillations should be seldom used, and then only in the most skilled hands and with the greatest care; otherwise there are likely to occur structural changes in the urethra, predisposing to organic affections amenable only to surgical procedure.

The discussion of Dr. Loux's paper was opened by Dr. H. M. Christian, who stated that the methods mentioned were, in the main, those practised by himself. He stated that potassium permanganate is of no value in gonorrhea other than as a simple cleansing agent. Dr. Christian agreed with Dr. Loux that argyrol was undoubtedly the best gonocide known to-day. After having used that silver salt continuously for more than two years, he prefers it because it never irritates, it is rapidly destructive to the gonococci, lessens the discharge and shortens the duration of the disease. The speaker stated that it must be borne in mind that one has to deal not only with the gonococci, but with the destructive action of the microorganism as well; in other words, destruction of the gonococcus does not by any means imply of necessity the cure of the disease, as there always remains a condition of catarrhal urethritis which requires a particular line of treatment. If a case of gonorrhea is seen in the early inflammatory stage, where ardor urinæ and chordee are the most annoying subjective symptoms, Dr. Christian orders powders containing salol, sodium bromide, potassium bromide, each 2½ grains every two hours. At the same time a 5 per cent. solution of argyrol is ordered to be used by the patient as a hand injection three or four times daily, the solution being held in the urethra for ten minutes. If the patient can spare the time it is advisable to wash out the anterior urethra with several syringefuls of warm normal salt solution prior to using the argyrol injection; this line of treatment can be carried on through the second and third week. When the subjective symptoms subside, it is sometimes of considerable advantage to supplement the local treatment with the use internally of copaiba and sandalwood oil. Ordinarily at the beginning of the third week, the patient enters upon the stage of decline, or, as Professor Finger styles it, the "mucous terminal stage" of the disease. In a case going on to recovery, the discharge is now scanty, then mucopurulent in character and containing few if any gonococci and this is by far the most important stage in the treatment of the disease as regards the patient's future welfare; it is here that experience teaches that one needs more than a mere gonoccidal agent. In addition mild astringent lotions are needed to help restore the integrity of the damaged mucous membrane. A good plan now is to use 5 per cent. solution of argyrol night and morning, employing through the day some such astringent as zinc, bismuth, hydrastic, lead, berberine, etc. At the beginning of the fifth week when nothing remains but the well-known "morning drop" and the urine is clear but contains shreds, it is well to use the argyrol solution at night and to use once or twice through the day one of the well-known astringent mixtures. If in the second or third week the clinical symptoms and the two-glass test show involvement of the whole urethra, the treatment by hand injections is temporarily abandoned. Deep instillations of ten per cent. solutions of argyrol are then employed at short intervals until such time as the second urine becomes clear. This in general is the line of treatment that the speaker had used at the University of Pennsylvania and his other clinics for the past two years and is one that has given more satisfactory results than any hitherto employed.

Dr. Orville Horwitz condemned the irrigation treatment of gonorrhea and summarized his opinions as follows: The irrigation method of treatment will not abort acute specific urethritis; chronic urethritis and involvement of the deep sexual organs are common sequences; in many instances, in order to effect a cure in the terminal stage of the disease, the irrigation must be discontinued and other methods of treatment employed; irrigation should not be employed in the acute stage of specific urethritis; irrigation of the deep urethra by means of hydrostatic pressure is injurious in the majority of cases of acute gonorrhea, and is conducive to the development of complications; the best treatment today for gonorrhea is that by means of injection of argyrol solutions which are strongly antiseptic and non-irritating.

Dr. R. O. Kevin prefaced his remarks with the statement of the French surgeon Ricord, that "A clap begins and God alone knows when it will end." Fortunately, however, this statement is not as true as it was a few years ago. Dr. Kevin stated that with the use of twenty per cent. argyrol solution he had been able to cure 85 per cent. of his acute cases in from two to four weeks. He quoted Purdy, of London, who stated that since the introduction of argyrol into the enormous clinic at the London Lock Hospital, seventy-two per cent. of the early cases had been cured within a month and there had been no relapse after six weeks. Dr. Kevin had been associated with Dr. Loux for several years at the clinic and could corroborate his conclusions. The speaker stated that he had seen so many acute cases cut short that he always practised the abortive method when possible; this method is as follows: If the patient presents himself during the first forty-eight hours of an attack of gonorrhea, the anterior urethra is washed out with warm water or normal salt solution. Then two drams of twenty per cent. argyrol solution is injected into the anterior urethra and held there for ten minutes; this injection is repeated by the patient every three

hours, night and day, for three days. Even if this method does not abort the disease, it always effects a cure in a shortened period, and affords the patient entire freedom from the pain and irritation usually present in an early gonorrhea. If by this means the disease does not show signs of being aborted, Dr. Kevin practises the same methods mentioned by Dr. Loux.

The Radical Cure of Senile Hypertrophy of the Prostate.—Dr. Orville Horwitz read this paper, which is based upon a study of 145 operations performed by himself. He stated that the question under discussion has, with the possible exception of appendicitis, attracted more attention in the surgical world than any other subject. It is well-recognized that the danger to the patient with enlarged prostate begins as soon as it is necessary to resort to the daily use of the catheter and when this period arrives a surgeon should be consulted to supervise the case and decide what operative measures are desirable or necessary. It was emphasized that no one operation was suitable to all cases and that each patient is a law unto himself in the matter of choice of operation. The two operations which have stood the test of experience are prostatotomy by means of the galvano-cautery (the so-called Bottini operation) and prostatectomy. The speaker stated that the Bottini operation is extremely valuable, safe and always to be preferred to cutting operations in suitable cases. Out of 98 cases operated upon by the author, by the Bottini method, three died, two of uremia, and one of sepsis; all three were very old men. Twelve cases were lost sight of after leaving the hospital but were much improved when last examined. This leaves 81 cases concerning which there was obtained definite knowledge as to results. The ages of the patients varied between fifty-two and eighty-one years. The speaker stated that his statistics proved conclusively that the earlier the patient submitted to operation, the better the results. Of the total 81 Bottini operations all the patients were either entirely cured or very much benefited; four required second operation, and a considerable proportion were treated for several months subsequently for accompanying chronic cystitis. Prostatectomy, the speaker stated, is regarded as a valuable operation but authorities differ as to when and how it is to be performed. As many as 20 different operations have been suggested. Here, too, the individual case decides methods, choice of operation, etc. The prostatectomies performed by the author were as follows: 3 complete (suprapubic incision); 6 complete (combined suprapubic and perineal incisions); 7 partial prostatectomies (suprapubic incision); 34 complete perineal prostatectomies. Of the 9 complete suprapubic operations, two died, one of suppression of urine, one of uremia. In all the cases, convalescence was slow; in five cases the ultimate results were all that could be desired. Of the 34 perineal prostatectomies, six died from uremia, sepsis or shock; 6 cases were lost sight of after leaving the hospital; 16 were cured, four markedly benefited, one unimproved.

Dr. Horwitz summarized the results of observations in his 145 operations as follows: (1) A routine method is not applicable to the treatment of prostatic hypertrophy; every case is a law unto itself and the treatment will depend on the various conditions presented in each individual case. (2) The dangers attendant on the daily catheterism are greater than those of a radical operation performed at the onset of the symptoms caused by the obstruction. (3) The proper time to perform a radical operation is reached as soon as it becomes necessary for a patient to resort to daily catheterism. (4) The gratifying results obtained by a number of the operations in many cases demonstrates that the Bottini operation is one of great surgical value. It is applicable to a large percentage of cases; which if properly selected has proved to be the safest and best method of relieving an obstruction caused by prostatic hypertrophy. In those cases in which a stone in the bladder is associated with a prostatic enlargement, lithoplaxy may be performed in conjunction with a galvanocautery prostatotomy. (5) A complete prostatectomy is justifiable if performed early before the individual is broken down in health and secondary complications have supervened. In early operation the results are most satisfactory, recovery rapid, the mortality varying between five per cent. and seven per cent. (6) A complete prostatectomy in feeble elderly patients with long-standing obstruction and secondary complication, the prognosis is grave and the mortality ranges between 15 per cent. and 18 per cent. If the bladder in the cases happen to be hopelessly disabled, the results obtained by the operation are negative. Cases of this description are only suitable for suprapubic drainage. (7) In 90 per cent, of all cases the gland can be readily removed by means of a medium perineal incision. The perineal operations recommended by Bryson is considered the operation of choice. (8) Complete suprapubic prostatectomy is shown to be more dangerous than the perineal operation for obvious reasons. A suprapubic prostatectomy is safer if combined with perineal drainage. (9) Partial suprapubic prostatectomy is indicated in such cases as where a valve-like lobe exists which interferes with urination, or where there is a partial hypertrophy of one of the lobes. (10) A perineal prostatectomy is best suited for those cases where the enlargement of the lateral lobes has a tendency to progress toward the rectum, to obstruct the urethra, or project backward into the bladder. (11) A prostatectomy is always attended with more danger than the Bottini operation and the convalescence is more prolonged. In suitable cases the latter operation is therefore the one of choice.

Dr. Edward Martin agreed with Dr. Horwitz that, if operation has been advised and consented to, the circumstances of the individual case decided which of the several operations is to be performed. He believed that the Bottini operation has proved of great value and is preferable to cutting operations in suitable cases. He did not, however, advise operation in all cases of enlarged prostate. He recognized the inconveniences and dangers attendant upon the daily use of the catheter, but believed in the value of palliative measures in the majority of cases. He recommended care in the selection of catheters and chose one that enters the bladder with the least force and least pain to the patient. If a soft rubber catheter cannot be introduced, a woven elbowed one is to be chosen. If obstruction or spasm necessitates habitual resort to a metal catheter, surgical intervention is required. When patients use the instrument upon themselves, the hands should be washed thoroughly, dipped in bichloride solution, the meatus washed with the same solution, and be provided with an irrigating bag containing one pint of hot argyrol solution, 1 to 1,000. Infection of the bladder is commonly present and should be treated by means of bladder irrigations. For this purpose a fountain syringe, supplied with a catheter, should be suspended two feet above the level of the bladder. The anterior urethra is first thoroughly flushed, after which the catheter is pushed into the bladder and the urine withdrawn. The flushing of the bladder is continued until the return flow no longer contains pus or mucus. The temperature of the argyrol solution employed should be of the temperature of the body or a little above it. When practicable this antiseptic flushing should be done each time the catheter is passed. If this treatment is inefficacious continuous catheterization becomes necessary. For this purpose a

large, soft rubber catheter, or a self-retaining one, is selected and the antiseptic solution introduced; if the catheter is properly introduced, the entire amount of the solution will return. Twice a day the urethra and bladder are thoroughly flushed with the antiseptic solution, the catheter being withdrawn far enough to allow the injected fluid to escape from the meatus, and then being pushed back into its former position. The success of this treatment depends upon securing free and continuous drainage and this is incident to the permeability of the catheter and its retention in the proper position. When skilfully applied it is one of the safest and most successful means of treating cystitis, which so frequently complicates obstruction from prostatic enlargement.

BOOK REVIEWS.

Subjective Sensations of Sight and Sound, Abiotrophy and Other Lectures. Second Series. Lectures on Diseases of the Nervous System. By Sir William R. Gowers, M.D., F.R.C.P., F.R.S., Hon. Fellow Coll. Phys., Ireland; Member of the Soc. Medicins Russes of St. Petersburg and of the Royal Soc. of Science of Upsala, etc. P. Blakiston's Son & Co., Philadelphia.

It is almost needless to say that this series of lectures is extremely interesting and suggestive. No one can read any of them without being stimulated to the making of observations for himself along similar lines, and that, rather than the mere feeling of information acquired, is the true test of the value of a medical essay. For the specialist in mental diseases the essays on Subjective Visual Sensation and Subjective Sensation of Sound will prove particularly valuable. The essay on Syphilitic Diseases of the Nervous System, thoroughly conservative as it is, enunciating certain principles that are of the greatest practical usefulness, deserves to be read not only by the specialist in nervous diseases, but by every general practitioner, for, unfortunately, the beginnings of syphilis of the nervous system must be seen and treated by the practitioner first and are only too often missed or neglected. It is interesting to find that Sir William does not believe either in the large doses of some of the American school or the prolonged treatment of the French school of Syphilologists, yet his conservatism is supported by excellent reasons.

A Manual of Medicine. Edited by W. H. Allchin, M.D.Lond., F.R.C.P., F.R.S.Ed., Senior Physician and Lecturer on Clinical Medicine, Westminster Hospital, etc. Vol. 5. Diseases of the Digestive System and of the Liver; Diseases of the Peritoneum and of the Vessels of the Abdomen; Diseases of the Kidneys; Diseases of the Ductless Glands. The Macmillan Company, New York.

We have already spoken of the extremely handy size of the volumes in Dr. Allchin's Manual on Medicine. Cumbersome tomes may be absolutely necessary at times, but they certainly are not convenient. The present volume contains especially the diseases of the digestive organs. Special attention is paid to the mouth and its various affections, an important area of the digestive tract, since the impression has gained ground that there is much more danger from neglecting pathological conditions in the mouth than was formerly thought. With regard to the three conditions, vomiting, diarrhea and constipation, which physicians are oftenest called upon to ascertain the meaning of and to treat, there are twenty very practical pages typical, one would say, of the English direct, concise, yet complete method of dealing with such subjects.

Besides disorders of digestion other affections of the abdomen are treated in this volume. Recent progress with regard to the diseases of the liver and of the kidney is brought out admirably. Considering that all of this material is crowded into less than seven hundred comparatively small pages, it is surprising to find how little of the sensation of crowding or hurriedness is experienced in reading the volume. The condensation necessary to accomplish this has been done very, very well, and Allchin's Manual promises to make for itself a definite place in English-American medical literature.

The American Pocket Medical Dictionary. Fourth Edition. Edited by W. A. Newman Dorland, M.D., Assistant Obstetrician to the Hospital of the University of Pennsylvania. W. B. Saunders & Company, Philadelphia, New York, London.

The appearance of the fourth edition of this invaluable work hardly needs extended review, but it would be impossible to pass it by without adding a tribute to its worth and excellence. In its new form it will be found more useful than ever before, and those few members of the medical profession who have been able to dispense with it in the larger edition can hardly fail to feel the need for such a handy volume. Not only is its text accurate and up-to-date, its illustrations copious and a real illumination to the reader, often sorely perplexed by misleading pictures and diagrams, but its appearance is so attractive and its size so convenient that we feel sure there will soon be many to declare that they "could not keep house without it."

Biochemical Researches. Collected Reprints of Publications from the Laboratory of Physiological Chemistry of Columbia University. By William J. Gies and collaborators. Vol. 1. Columbia University.

Some 40 reprints are here brought together, with some published abstracts of preliminary reports of investigators into a highly representative volume that reflects great credit upon the editor.

The papers have appeared in scientific publications and it is a great service that is here rendered in their collective binding. We hope that Dr. Gies may continue to be the stimulus for younger men in work in physiological chemistry and that he may be able to further the cause of scientific medicine by other volumes from his laboratory.

Auto-Intoxication. Part IV. of Clinical Treatises on Disorders of Metabolism, Pathology and Therapy. By Carl Von Noorden, Physician-in-Chief to the City Hospital Frankfort-A.-M., Germany. E. B. Treat & Co., New York.

In this little volume Professor Van Noorden has once more proved his originality in the handling of a difficult but important subject. The phases of auto-intoxication treated are those connected with the acid products of metabolism, especially in diabetic conditions. Those who are interested in diabetes will find interesting and suggestive discussions of the sources of the acetone bodies, and of the question, Where are the acetone bodies formed? While suggestive, some of this work must wait for confirmation at the hands of other observers.

Elements of Surgical Diagnosis. By A. Pearce Gould, Surgeon to the Middlesex Hospital, etc., London. Third edition. W. T. Keener & Co., Chicago.

For the third edition of this practical little work, the whole text has been revised, much has been rewritten, and many additions have been made with the hope of

adding to its usefulness. The revision has taken into account how much the art of surgical diagnosis owes to the advances in the knowledge of bacteriology, skiagraphy and hematology. In addition to other material a chapter has been added on the diagnosis of certain acute abdominal diseases for which surgical aid is now sought. The author has separated the diagnosis of injuries from that of diseases, as it seems to him to possess the advantage of greater simplicity, although not in strict accordance with the ways of nature. The only omission is the total lack of illustrations. The work is well written, in a concise pointed style and thoroughly covers its allotted field. The index is complete and satisfactory.

The American Year-Book of Medicine and Surgery. A yearly Digest of Scientific Progress and Authoritative Opinion in all Branches of Medicine and Surgery, drawn from Journals, Monographs, and Textbooks of the Leading American and Foreign Authors and Investigators, collected and arranged with critical and editorial comments by J. M. Baldy, M.D., Samuel Horton Brown, M.D., J. Chalmers Da Costa, M.D., W. A. Newman Dorland, M.D., George Fetterolf, M.D., John H. Gibbon, M.D., Virgil P. Gibney, M.D., C. A. Hamann, M.D., Barton Cooke Hirst, M.D., D. Braden Kyle, M.D., Walter L. Pyle, M.D., J. Hilton Waterman, M.D., under the general editorial charge of George M. Gould, M.D. Surgery. W. B. Saunders & Company, Philadelphia, New York and London.

This volume covers the field of Surgery, Obstetrics, Gynecology, Orthopedic Surgery, Ophthalmology, Diseases of the Nose, Throat and Ear and Anatomy, giving a summary of the more noteworthy advances and discoveries made during the past year and does more than is usual in such works, to give the profession a clear idea of what is of real value in recent medical literature of the world. More than half the space is given to General Surgery, and while references are made to the original publications, thus enabling one to follow up more in detail any subject discussed, it is a pleasure to read the reviews given and to get a tangible idea of the investigators' work. In many instances the technic of operative procedure is given in full with citation and complete analyses of cases treated and the author's conclusions therefrom, thus rendering it unnecessary for the general reader to pursue further the subject under consideration.

The same statements are true of the other subjects treated, so that we regard the volume as an exceedingly valuable addition to the library of any who wish to become well informed in the most advanced methods of treatment by acquiring a knowledge of what has been done along advanced lines of investigation.

It is a well bound volume and the illustrations, excellent and well chosen, greatly enhance the value of the text.

A Reference Handbook of the Medical Sciences. By Various Writers; Edited by Albert H. Buck, M.D., Vol. 7. Sac-Ulc. William Wood & Company, New York.

In sight of the end of this admirable reference work—a library in itself—we congratulate, editor, contributors and publishers alike on the successful accomplishment of a truly remarkable task. Synonyms fail us in further praise of the Handbook. Six times have we given the work unstinted commendation and we lack appropriate phrases to give it again in new form.

Some attention may be called to a few of the articles that are specially commendable. Such are those on Secretion, Septicemia and Pyemia, Serum Diagnosis and Therapy, Sewerage, Sexual Organs, Spectacles, Spermatozoa, Spinal cord and its Diseases, Spine, Spleen, Stomach, Sympathetic Nervous System, Syphilis, Teratology, Trematoda, Tuberculosis, Tumors and Typhoid Fever. These are among the more important longer articles, but many of the shorter articles are entitled to equal characterization.

A Practical Treatise on Nervous Diseases. By S. Savary Pearce, Professor of Nervous and Mental Diseases in the Medico-Chirurgical College of Philadelphia. D. Appleton & Company, New York and London.

This work should be classed as one of the many smaller manuals of the purely descriptive type that are of great service to the student-body in their initial introductory to the study of nervous diseases. As such we believe that it will serve a very useful function.

For the practitioner, however, and even for the more thorough class of student, we do not think it as well adapted as many other works of the same class and description. We make this comment because of the fact that the work strikes us as incompletely thought out. There is a lack of logical continuity in the mode of descriptions. Many related diseases being separated, even in different chapters—and many unrelated disorders being considered in sequence.

The value which the anatomical structure of the nervous system makes logical arrangement of symptom-complexes possible is here, we believe, entirely lost sight of—making, to our mind, a nervous hodgepodge rather than a consecutive handbook.

A Compend of Gynecology. By William H. Wells, M.D., Chief of the Gynecological Staff of the Mount Sinai Hospital, Philadelphia; Demonstrator of Clinical Obstetrics in the Jefferson Medical College, Philadelphia; etc. Third Edition Revised, Enlarged with 145 illustrations. P. Blakiston's Son & Co., Philadelphia.

The value of this most excellent little quiz-compend is established by the fact that it has successfully entered its third edition. A section on the general therapeutics of gynecology has been added in this edition, thereby making it a most complete publication of its kind.

Many new plates have been inserted and, contrary to the usual illustrations in quiz-compends, they are explanatory rather than puzzles to the students.

We can most heartily recommend this little compend as a helpful adjunct to the gynecological text-books.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

La Torsion du Cordon Spermatique. Lr. LaPointe. 12mo, 180 pages. A. Mallione, Paris.

Obstetrics for Nurses. By Dr. J. B. DeLee. 8vo, 460 pages. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.

Progressive Medicine. March 1, 1904. 8vo, 338 pages. Illustrated. Edited by Dr. H. A. Hare. Lea Brothers & Co., New York and Philadelphia.

System of Physiologic Therapeutics. By Dr. S. S. Cohen. Volume 7. Mechanotherapy and Physical Education. By Drs. J. K. Mitchell and L. H. Gulick. 420 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

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SPECIAL ARTICLE.

BELLEVUE HOSPITAL—THE OLD AND THE NEW.*

THE history of Bellevue Hospital goes back to an epidemic of yellow fever which occurred in New York in 1794. To us of this generation it seems almost impossible to conceive of yellow fever raging virulently as far north as New York, but it must not be forgotten that at the end of the eighteenth and the beginning of the nineteenth centuries epidemics of yellow fever were very frequent along the Atlantic coast, even as far north as Boston. At one time it was actually declared, by a committee of authoritative medical men who investigated the situation, that Philadelphia would have to be abandoned eventually as a site for a great city because of the frequency with which this disease ravaged the population. Its appearance was always followed by the yellow fever scare and in 1794 the fears of the inhabitants of New York, and especially the conviction that the disease would surely recur again the next summer because that was always the rule in the epidemiology of those times prompted the authorities to do something in order to lessen the danger of the spread of the disease. Dr. Carlisle, in his account of Bellevue Hospital, published by the Society of the Alumni of Bellevue Hospital, New York, 1893, gives the origin of the name Bellevue and the conditions of its original purchase as follows:

"It was the beginning of the worst yellow-fever period the city had experienced. The State government had represented to the city authorities the necessity of providing some place of isolation for persons afflicted with the malignant fever. The most eligible place that presented itself was that belonging to Mr. Brockholst Livingston, and situated on the East River, 'opposite the three-mile stone.' It was then held under lease from Mr. Livingston by Nicholas Devise. This lease was to run for six years, with the privilege of purchase for £2,000. In view, therefore of the exposed condition of the city, and in order to allay the fears of the citizens, it was determined to purchase this lease. Mr. Robert Lenox, in behalf of the board, concluded the purchase in 1794. This plot was about five acres in extent, and had been once a part of the Kip's Bay Farm. It was conveyed by Jacobus Kip about the year 1765 to Peter Keteltas; by him to Martin Hoffman, and by him in turn to Robert Leake, in 1772. Leake gave to the place the name of Belle View. In 1781 it was again sold, and in 1783 it came into the possession of Lindley Murray. The latter gentleman, while residing in England in 1793, whither he had retired at the close of the War of Independence, conveyed this property through his attorneys to Mr. Brockholst Livingston, who retained the name but with a different spelling,—Belle Vue,—and this is the genealogy of the name."

The principal building existing at that time on the plot thus secured was a two story and attic structure. This was not ready for occupation until the fall of 1794. Always with the first frost yellow fever declines and then promptly disappears, so that there was not much use for the newly acquired property during this first year. As anticipated, however, the fever occurred very early the next year and before the end of May some sailors had been transferred to Belle Vue (spelled as two words, in those times, the second one with a capital), by the health officer of the board. Some idea of the awful way in which the disease raged during this summer may be gathered from the fact that the deaths from yellow fever numbered 732, out of a population of less than 30,000. Hospital accommodations were incomplete, as is very likely to be the case in a rapidly growing town subject to all the dangers of an introduction of infectious diseases by the arrivals of vessels of all kinds, and so there came the first accounts of complaints with regard to Bellevue, which, as good New Yorkers we are sorry to say, have practically continued with certain noteworthy intervals of interruption ever since.

The next year the yellow fever did not come so early. Dissatisfaction with the mortality records of Bellevue and the hope that a more airy location and one farther removed from the city itself might prevent the spread of infection, led to the selection of Bedloe's Island as a place for the erection of a new pest house, and this was used as a quarantine station. The beds and bedding which had been used the year before at Bellevue were taken to this hospital, which was under the control of the State. The health officer of the time, Dr. Richard Bailey, complained in a report to Governor Jay that these articles were in a very filthy state, and that within eight days after they were brought from Bellevue those who had transported them, together with the nurse and the stewards of the house, were attacked with fever, the attending physician, Monsieur Bouvier, also being indisposed for several days.

Bellevue became a hospital again in 1798, as a result of the worst epidemic of yellow fever the city ever knew. There were over 2,000 deaths during the summer and fall of 1798 out of a population of about 60,000. In his account of Bellevue Hospital, Dr. Carlisle gives, on contemporary authority, the report namely of Dr. I. S. Douglass to John Oothout, Esq., Chairman of the Commit-

* We are indebted to the Society of the Alumni of Bellevue Hospital, through the courtesy of Dr. Robert J. Carlisle, for a number of the illustrations embellishing this article.

tee, as published in the *Medical Repository*, December 17, 1798, the details of this matter:

View from the Southwest about 1845.

"Belle Vue was opened on June 12, 1798, under the care of Dr. Isaac S. Douglass. From that date to November 14, 389 patients were admitted, perhaps three-quarters of whom were sick with pestilential fevers. There were sixteen nurses employed. Dr. Douglass himself contracted the disease, but he traced the infection in his case to his having visited friends in New York and having slept in a highly infected part of the city. Three days after his return to Belle Vue he was seized with a fever. He ultimately recovered, and in December of that year he was asked by the Health Commissioners to trace the source of infection in his own case. In his reply he gives some interesting facts in regard to the interior arrangements of the hospital: 'The health office boatmen who were in the habit of bringing the sick to Belle Vue from the city and shipping were accustomed to enter the hospital at all times, and to assist in placing as well as moving the sick from room to room. The number of the washerwomen during this period was seven. Several persons were employed constantly in cooking, cleaning, and in burying the dead. There were besides transient people, near relatives of the sick, who were permitted by the Commissioners to visit occasionally. Several persons accompanied their friends to Belle Vue, stayed with them and nursed them during their illness. Under all these circumstances there happened to my knowledge no instance of infection, although an opinion has been adopted by many that my sickness, whilst residing at Belle Vue Hospital, arose from infection imbibed at that place. . . . In making this declaration, I must remark to you that the situation of the medical attendants at Belle Vue was by no means a propitious one. Before the new buildings were erected for the accommodation of the sick, the physicians' room (the only one they had) was literally surrounded by them (the sick). The room adjoining the front and back piazzas, the hall, the rooms and hall in the second story, a room in the cellar that had been used for a kitchen, all contained sick. They were likewise placed in several Chinese summer-houses in the small space between the main house and the East River; and in the building erected for the purpose of a bathing-house. A large canvas was also erected (for want of a more convenient place) under the windows of the southwest part of the house for the reception of the dying and the dead. Under all the disadvantages enumerated, I know of no instance where infection resulted.'"

It is curiously interesting to find this anticipation of modern knowledge with regard to the non-infectiousness of yellow fever by ordinary contact, but if observations had been carefully made such would have been found to be the case by others. It is interesting but not very encouraging to find also that Bellevue Hospital at that time furnished opportunities for the study of infections of various kinds, extending even to the possibilities of physicians becoming infected because of the crowded way in which patients were housed and the cramped and narrow quarters allowed to overworked medical men. We might consider it due to the crudeness of the times and the one thing that one might be sure would not occur in a modern New York hospital would be just this overcrowding and its results, and yet this is the worst source of complaint with regard to the hospital at the present time.

The city realized the necessity for having the property as its own instead of renting it and so in 1798 it was bought for £1,800 sterling. For several years after its purchase there is no account of the reception of patients at Bellevue, but in 1803, as the result of another yellow fever outbreak, during which 700 deaths occurred in the city, nearly 200 patients were received into the hospital. Very few of these were natives or residents of New York, most of them being recent arrivals, immigrants principally from Ireland and Germany. The condition of affairs at the hospital can be best realized from the mortality statistics, the number of deaths during the summer and fall just equaled the number of recoveries. In 1805 Bellevue was handed over to the Health Department and was used for the last outbreak of yellow fever which occurred for some fourteen years. Notwithstanding these awful epidemics of fatal disease, the city continued to

Vicinity of Belle Vue in 1803.

grow, and in 1805 had over 75,000 and in 1810 had reached nearly 100,000 in population.

In 1811 it was considered necessary to secure a large site for the almshouse and hospital purposes and as a large plot of ground just next to

the house that had been used as a fever hospital at Bellevue could be obtained it was purchased. The property thus secured by the city is the present site of Bellevue Hospital and was bought from the heirs of the Kip family, having formerly constituted a part of the old Kip's Bay Farm. The committee which was sent by the Common Council to negotiate for the property was empowered to purchase the site at a price not exceeding $3,500 an acre. It was on this basis that the sale was made, the survey made by the city surveyor showing that the plot contained slightly over six acres. The liberal foresight displayed by the city authorities at the time was undoubtedly due to a large extent to the broad-minded sense of municipal obligations toward its citizens existing in the mind of the Mayor De Witt Clinton, and his action in this special matter seems to have been influenced to no slight degree by his associations with Dr. David Hosack, who was doing so much at that time to organize charities of various kinds in New York City. The old Kip estate, of which the Bellevue grounds were a part, contained originally 150 acres on the East River, extending from what is now about Forty-first street down to Twenty-sixth street. As there was a hollowing out of the river coast line here this portion of the East River came to be known as Kip's Bay, and the whole tract of ground as Kip's Bay Farm.

The Kips were descendants of Hendrick Kip, a thrifty tailor who came from Holland to the City of New Amsterdam some time about 1640.

In selecting this really very fine location for its almshouse and hospital, or rather for what afterward came to be considered its Department for the poor and for ordinary criminals, for prisoners were also to be housed in it, New York City was only following out the tradition of the liberal municipal generosity in the treatment of its poor that had characterized New Amsterdam from the very beginning of its existence. Even when the city had less than one thousand inhabitants there was a hospital in connection with its poor house and this was, by the way, the first hospital built upon the soil of what is now the United States. This was established toward the end of 1658 and existed down to 1680, when there is a record of the selling of what was known as the "old hospital," or "five houses," to be found in Toner's Medical Men of the Revolution.

As is noted by Dr. Carlisle at the end of the seventeenth century New York, though a mere village of 4,300 inhabitants, contributed for the support of her poor proportionately nearly one-half as much per capita of population as did London at the same time, which had at this period a population of nearly three quarters of a million and was considered one of the greatest cities in the world. He notes also that this expenditure was not the only source from which the indigent could draw relief. Besides the money provided by the municipal poor tax, which amounted to nearly $800 a year, a large amount was contributed by the Church, which had good endowments and was liberally supported by the members.

The first Poor House in New York, which is of interest to us in connection with Bellevue as the City Hospital because it contained a ward for the sick poor, was erected in 1735. Its site was that upon which the City Hall now stands. The instructions adopted by the Common Council for the Committee which was to oversee its construction, show once more the liberal spirit in which the old-time City of New York faced its municipal

The First Poorhouse in New York, 1736.

duties in this matter. Enough land was to be obtained so that the building might have a good yard and garden attached to it. The building was to be of good size for those times and the material was to be of stone. It was 56 feet long, 24 feet wide and two stories high with a cellar. The ward for the sick poor was about 25 feet square, situated on the upper floor on the Broadway side of the building and represents the first hospital accommodations provided within the limits of the present New York City.

This building was so substantial and well built that later on, when it was abandoned as a poor house and hospital it was readily converted to

Vicinity of the Poorhouse, 1763.

other uses and became the famous Scudder's American Museum for several years, while the Academy of Arts and the New York Historical Society also had rooms in it. The name of the New York Institution was given to it and such other charitable and educational interests as the Lyceum for the Deaf and Dumb and Professor Griscom's chemical lectures, a sort of popular course in chemistry in those days, were allowed quarters and all rent free.

It is interesting, too, to find that the first visiting physician at this original hospital in New York was a worthy predecessor of the distinguished medical men who have since occupied such positions in care of the city's poor. He was a pupil of the famous Boerhaave who had introduced the clinical teaching of medicine to the world and had practically revolutionized the medicine of his time. This first visiting physician in New York was Dr. John Van Beuren, a graduate of the Medical School in Leyden. Two of his sons, Beeckman and Abraham Van Beuren, were also physicians, the latter being the grandfather of the late Professor William H. Van Buren, the family having dropped the 'e' of the name in the interval.

It is not surprising, then, from what we know of the early history of New York's attempts to accommodate its poor, that, after the purchase of a magnificent location on Kip's Bay, the erection of a very substantial and even handsome building with all the architectural advantages considered necessary at the time was determined upon. During the year 1811, after the purchase of the ground, rapid progress was made in the building so that before the end of the year, nearly $50,000 had been expended. In 1812 came the war with England and the Common Council ordered the building committee to spend as little as possible though it did not positively require the work to be stopped. It was, therefore, not until 1816 that the main building of Bellevue Hospital, almost as we know it now, with the exception of the upper story and some of the pavilions at the rear, was finished.

At the end of April, 1816, the buildings were announced as ready and a formal opening ceremony was arranged. This was held on April 29, at twelve o'clock. The building was originally completed in three stories. It was 325 feet long, by 55 feet wide running not quite directly north and south with a north and south wing each 100 feet long by 55 feet wide.

This main building, however, was intended more especially for the poor and two special pavilions, 75 feet long by 25 feet wide, almost on the lines respectively of the present Twenty-eighth and Twenty-sixth streets were erected for hospital purposes—the northern one for male patients the southern for female patients.

Besides the absence of the unoccupied ground around the hospital, only one feature of the present situation of Bellevue would strike an inhabitant of New York of those days as very different from that which exists at the present time. What is now the main hospital building was then much nearer the river. The high water line came up to within a short distance of First Avenue. Otherwise things are mainly unchanged, the additional story that has been added to the main building at Bellevue, changing its appearance very little, as can be seen from the views given of the building as it appeared in those days.

The total cost of the institution as reported on its completion at the beginning of 1818, was about $425,000. The whole was enclosed by a stone wall, ten feet in height, and it was known as the Bellevue establishment. The grounds of the institution had been extended before the erection of the wall, so that they reached approximately as far as Second avenue on the west and Twenty-eighth street on the north, and ran as far south as Twenty-fourth street. The southern portion had formed a part of the old Rose Hill farm and was purchased in 1818. The name Rose Hill is still used in connection with this part of the town in certain ways, though the recollection of its origin is gradually fading away.

Before a decade had passed such was the growth of the city that it began to be realized that the almshouse and the hospital could not be accommodated at Bellevue and especially not if proper attention and sufficient room was to be given to the sick poor. Accordingly Blackwell's Island was purchased by the city and in 1828, after the erection of buildings on it, first the prisoners and later the paupers were transferred to it. The building had scarcely been given up entirely to hospital needs when a series of epidemics took place during which a number of doctors and medical students laid down their lives. In 1846, John James Lawrence, a medical student, died of typhus. In 1847, Drs. Porter and Van Buren went the same way. During the same year eight other resident physicians took the disease, but fortunately recovered. In 1848, no less than seven physicians died at their post; caring for typhus patients. Their names are on a glorious list of honor and deserve to be recalled every time that the history of Bellevue is spoken of. They were Beals, Blakeman, Cahoon, Green, Hedges, Seligman and Worth.

A sad piece of political history marred the Bellevue grounds in 1845. To quote Dr. Carlisle, "'the city's stepfathers,' as Dr. Francis has wittily dubbed the gang that went popularly under the name of The Forty Thieves, looked with envious eyes on the almshouse property and Bellevue received closer scrutiny than she had for thirty years before." This interest was, however, for selfish reasons. It was realized that a good political job could be made out of the sale of unoccupied land in and around the Almshouse. Accordingly all the region now extending from Second avenue to First avenue and from Twenty-sixth to Twenty-eighth streets, besides the land from Twenty-fourth to Twenty-sixth streets, lying along the river and west to Second Avenue, altogether nearly twelve acres, was cut up into building lots and sold at public auction. The public auction was a farce and the lots were bought in by those in the ring, who made a handsome sum of money. This sadly crippled the future of Bellevue and is a lasting disgrace to the city authorities of the time.

Perhaps the saddest part of this portion of the history of Bellevue is the fact that several medical schools offered to become purchasers of portions of this ground for the sake of the clinical facilities which the proximity to Bellevue would afford

them, but every offer on their part was rejected, because the publicity of the sales would almost surely reveal how much money the gang was making by this steal from the city. Since then, of course, Bellevue has been confined to its present much narrower quarters and the development that would surely have come long before this, only for the fact that more land was not available in the neighborhood, was prevented. It is this wrong that New York has ever since owed to itself to right.

The first important change in the old building at Bellevue came in 1854 when the wing extending eastward from the north wing of the old building along Twenty-eighth Street was erected. On this some $60,000 in all were expended and it was made four stories high, in anticipation of the raising of the rest of the building another story, the main hospital buildings, and though at the time the buildings were already nearly half a century old the medical and surgical staff of the time by their devotion of every energy to the work succeeded in making the hospital one of the model institutions of its kind throughout the world. It was not until after the introduction of antisepsis, and then later of aseptic methods, that the hopelessness of making such old buildings, originally built for living purposes alone, suitable for modern surgical purposes that physicians and surgeons realized the handicaps under which they worked.

About this same time an important addition was made to Bellevue in the shape of a pathological museum. This was due largely to the energetic enthusiasm of Dr. James R. Wood, and the building was determined upon in 1853, though

Bellevue Hospital in 1879.

which it had been determined must shortly be done. This new portion was formally opened April 23, 1855. The difference in the times between the original opening and this occasion was marked by the absence of any religious ceremonies in the second and by the fact that the principal address was delivered by the President of the Medical Board, Dr. John W. Francis, who was one of the most prominent physicians of the city and a President of the Academy of Medicine.

The next year, 1856, saw the completion of the project to add an additional story to Bellevue, but also saw a more important addition in the erection of an amphitheater for clinical teaching in medicine and surgery, capable of seating 600 persons. This was the most commodious operating theater in the United States at the time. Since 1856 there have been practically no changes in not completed for some years afterward. It was of brick, two stories high and the upper story was used as a pathological museum and also a lecture room on pathological subjects. It replaced the old dead-house, which had been for many years an eyesore on the ground and had come to be more than a suspected source of some of the infectious conditions that developed in the hospital. To the museum Dr. Wood presented a magnificent collection of pathological specimens, hence it bears his name and as it has been added to by many members of the Bellevue staff, it has become one of the most interesting pathological collections in the world.

In 1849, the Medical Board had resolved that it was unfortunate to allow the magnificent clinical opportunities for medical teaching at Bellevue to go unused. Some teaching was accordingly ar-

ranged for and after the improvements made in 1855-56 and the completion of the pathological department in 1857, this became regularly organized and took special importance as a department of the hospital. It was not until March, 1861, however, that definite arrangements were made for the establishment of a regular medical school and not until April of the same year that permission was granted by the Commissioners of Charities and Correction to erect a medical school building within the hospital enclosure.

In this same year, 1861, a series of typhus epidemics began, and, as is noted by Dr. Carlisle, for the seventh time in its history Bellevue physicians nobly responded to the calls made upon their time and strength and stood at their posts, though members of the house staff sickened and died. The disease began its ravages in 1863 and took with it Drs. Cook and King. In the following December and January, Rowe and Olmstead followed them. In April, 1864, Devlin and Dewey were martyrs to duty. Out of twenty-one members of the staff, fourteen contracted the disease and of these, six, as we have said, died.

Since 1860 the principal additions to Bellevue have been in the shape of pavilions and annexes and it is interesting to realize that these have been mainly the gifts of private individuals. The first one, called the Sturges' Pavilion, was built in 1879 and is intended for the accommodation of such patients as have just undergone capital operations. It is located just south of the northeast wing and runs parallel to it, being one story in height with a mansard roof. A second pavilion, somewhat resembling in outward appearance the Sturges and lying parallel to it, was built in the same year, 1879, by the Commissioners of Charities and Correction on the Twenty-sixth Street side of the grounds, and, because of the purpose for which it is designed, is known as the Insane Pavilion.

In 1883 a private benefaction once more made a distinct addition. It was erected by Messrs. F. and H. Marquand in memory of their brother, Josiah Penfield Marquand. The rear portion of this is occupied by a kitchen and rooms for the isolation of children suspected to be suffering from infectious disease, the character of which has not yet been determined. The rest of the building is divided between women and children. Four years later, in 1887, Mrs. Richard H. L. Townsend erected the Townsend Pavilion. This is some seventy feet in length, smaller than the other pavilions, and is for the use of the gynecological department. In 1890 Miss M. H. Dehon, at a cost of $6,000, built what is known as The Annex, consisting of a suite of seven rooms and an operating room at the west end of the Marquand Pavilion. The next year, Miss Josephine Lazareth obtained permission to build four rooms on the east end of the Marquand Pavilion, in order to provide accommodations for graduate nurses of the school who fell ill and who up to that time had been compelled to find places in other hospitals.

In 1892, one of the most important of recent improvements was in the erection of the new Alcoholic Pavilion, which is at the east end of the north wing, lying parallel to Twenty-eighth Street. As there is no other hospital in the city which receives these patients, Bellevue has to treat many thousands of them each year and this department of the hospital was very sadly needed.

It will thus be seen that Bellevue is a heterogeneous collection of buildings bearing no structural relation to one another, erected to fill the urgent need of the moment, often felt to be makeshifts and yet, under the condition of affairs that existed with no chance of any more coordinate method of improving and enlarging the hospital. The main building, the principal part of New York City's housing provision for its sick poor, comes down to us from nearly a century ago Even the improvements made about half a century ago were necessarily designed on lines entirely that made them accord with the old-fashioned plan. Whenever Bellevue has been under the care of a Medical Board it has done good work, while, whenever it has fallen under political influences, results have been only too sad for the poor and only too costly for the city itself.

The most important change that has come for Bellevue in recent years has been the amendment of the city charter, which took the management of Bellevue Hospital, including the other city hospitals, Gouverneur, Harlem, Fordham and the Emergency Hospital for Women out of the hands of the Department of Charities and vested it in a Board of Trustees to be appointed by the Mayor, and who were to serve absolutely without compensation. These trustees were to be seven in number, the term of office to be seven years, with rotation that gives opportunity for one new appointment each year. This system has brought Bellevue under the same form of management as is now enforced for private hospitals in this city and in most of the other cities of this country.

Already the city hospitals have gained much from this new system. There is no doubt, however, that much more may be looked for from it. The recent proposal to replace the century-old building by a new, modern hospital building is what might be expected from a board of trustees who have the best interests of the city and the city's poor at heart and who appreciate all that New York City owes to its sick poor.

It would seem, then, that the history of Bellevue is really about to open up one of its most important eras under this new régime and as an amelioration of conditions has been sadly needed for many years it must be a source of congratulation to every one interested in New York City and especially its ailing poor that the greatest city of the western hemisphere is about to supply itself worthily with accommodations for those of its citizens who have no other resource but to throw themselves on the public bounty in the midst of their illness. When it is considered with what a handicap the medical and surgical staffs have

done their charitable work in the recent past and how much of their labor they have seen go in vain because of the unsuitable surroundings the crying need for quarters of our great metropolis of the West will be realized.

The plans for the new buildings of Bellevue Hospital, a brief description of which is here appended, have been made public by Dr. John Winters Brannan, President of the Bellevue Board of Trustees, in an address to the students of Columbia University on Friday, April 22. The preliminary work of the architects, McKim, Meade & White, in drafting, represented a single outlay of $75,000, and the construction calls for an expenditure of $15,000,000.

This magnificent building, of which it is hoped the city of New York will approve, is designed to occupy three full city blocks, from Twenty-sixth to Twenty-ninth streets, and First avenue to the East River. The extra land alone will cost $1,000,000 and a conservative estimate of the total cost of the institution is $14,000,000. It will be the largest, handsomest, and most completely equipped hospital in the world, and will accommodate some 2,500 patients. Quarters are to be provided for over 100 physicians.

The building material is to be Harvard brick, with light stone trimmings. In the center will be a dome, 100 feet in diameter and 200 feet in height, which may be utilized to provide apartments for some of the resident staff. It will be surmounted by stone pillars supporting a bronze figure.

In addition to the city property to be purchased, the total structure will require two additional acres to be acquired by changing the bulkheads along the water front. The board of trustees of the hospital has permission from the War Department at Washington to make this change and the Street Cleaning Department would aid in filling in the space. The driving of piles would be an expensive item. The building is to be H shaped and, from the prospectus that has been prepared by the architects, is not, in general outline, unlike the Capitol in Washington.

The main part of the building will be 150 feet or more back from the river, and the wings running out on each side will form a large court.

Of course, it is not expected that there will be a demand on the hospital's full capacity as soon as it is built. On the contrary, it is expected that the new institution will meet the demands made by the city's growing population for a considerable time, and, besides, it will, it is said, be possible, with the present plans, to add four more pavilions when they are needed.

It would also be possible to leave off two pavilions of the thirteen that are contemplated in the present plans and still accommodate 2,000 patients. Under such circumstances the building would probably cost between $8,000,000 and $9,000,000.

The long arms of the building running east and west from the main part will front on Twenty-sixth and Twenty-ninth streets. The thirteen pavilions will all be under one roof, but between them will be covered arcades to allow a free circulation of air. Only four of the pavilions will face on First Avenue, and they will be used for the alcoholic, insane and other psychopathic patients, leaving to the others the benefit of the view and the air on the river.

Architects' Elevation of the New Bellevue Hospital Building.—View from the East River.

The appearance of the hospital from the river and from First avenue, where the main entrance will be, will be practically identical, except that, owing to the slope toward the river, the building will be one story higher on that side. It will be seven stories high on the river side. It will be 715 feet from east to west and 712 feet from north to south.

With the exception of the dome over the main part of the building and the curved roofs over four of the pavilions, which the architects, it is said, have added to accentuate the pavilions and lend architectural support to the dome, all the roofs are flat.

Roof gardens will be used by convalescent patients, who will be carried directly to the roof in seven elevators. These roof gardens will have temporary wards accommodating 100 patients. The roof will be surrounded by a four-foot parapet.

In the front, as well as in the rear of the hospital, there will be grass plots 300 by 500 feet, on which additional pavilions may be added if necessary.

The administration building, which will contain all the executive offices and libraries of the hospital and will provide quarters for 100 male nurses in the lower portion of which patients will be taken at night to receiving wards, accommodating 100, on the ground floor in the center of the long south wing.

The five upper floors of the south wing will contain the medical wards. The limit of each ward will be twenty-five patients, but several rooms will be connected with each, and may be filled with beds if necessary. The service rooms connected with every ward will be complete and modern in equipment.

A pavilion which will be near the present entrance to the hospital will have the three lower floors given over to the ambulance department and carriage house. The upper part will contain the medical amphitheatre, with accommodations for 200 students.

The west part of the long north wing will have quarters for 350 male employees on the three lower floors, while the upper floors will be devoted to the pathological department. Further east on the ground floor will be the kitchen, storerooms, and the boiler room.

The five upper floors of the north wing will contain the surgical wards. The surgical amphitheatre will be equipped with ten small operating rooms, all within easy access of the various wards and complete in every detail.

The hydropathic department, designed to surpass that of any public, or, probably, even private institution, and to contain bathrooms for both employees and patients, will be on the ground floor of the central pavilion. It will be equipped with all modern apparatus for the treatment of disease by water, and will be one of the most remarkable new features of the hospital.

There will also be an elaborate system of balconies on all sides of the hospital. Each of the ninety-two wards will have either an open or an enclosed balcony of sufficient size to accommodate all the patients in each ward at one time.

Architects' Elevation of the New Bellevue Hospital Building.—View from the West side.

Besides the approval of the board of trustees of Bellevue and Allied Hospitals and the Board of Estimate and Apportionment, it is not altogether improbable that the plans for the new hospital will have to be passed on by the State Board of Charities before they are accepted.

This board will probably request the trustees to submit their plans for approval.

The Bellevue trustees have contended that the city charter and the statutes required them to submit plans for the buildings under their jurisdiction to the Board of Charities merely "for advice," which they could follow or not, and not for "approval."

The plans of the new Bellevue Hospital were drawn by Messrs. McKim, Mead & White, to whom we are indebted for the illustrations and specifications of the new building.

ORIGINAL ARTICLES.

THE DIASTOLIC MURMUR IN DIAGNOSIS.*

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THE study of the diastolic murmur presents more difficulties than are met with in the systolic variety. In its usual form it is simple and clear and its mere time and quality reveal the diagnosis in an instant, but no murmur can be more elusive in its site and intensity, while the possibilities of its characters are so numerous that they defy description as well as diagnosis. Eight varieties may be recognized.

The causes are aortic and pulmonary insufficiency, persistent ductus arteriosus, aneurisms, mitral stenosis, cardiorespiratory influences, pericardial, pleuropericardial.

1. *Aortic Insufficiency.*—In about 90 per cent. of the cases, the quality of the murmur is almost constant, being blowing and diminuendo. It follows the first sound after a slight pause and occupies the rest of the diastolic period, so that if the heart's action is not frequent the murmur is one of remarkably long duration. In the other 10 per cent. of the cases it may be rough, musical, rumbling, crescendo or of short duration, and may occupy any portion of the diastole.

The intensity varies greatly, in most cases it is marked, but no murmur can be more difficult to hear in slight cases or when compensation is failing.

The site of the murmur is not a fixed one in every case, in this feature it is unique. It may be heard localized at any point over the anatomical outline of the heart, but as a rule it has a point of maximum intensity from which it is transmitted downward toward the apex or to some extent upward along the great vessels or in any direction in proportion to its intensity. It is not often heard in the back unless the subject is thin and the murmur very loud, when it may be found between the inner border of the scapula and the spinal column. The points of maximum intensity in order of frequency are: just to the left of the base of the ensiform cartilage, over the second or third right spaces, over the third left space, in both instances near the sternum, and at the apex.

The cause of the varying point of maximum intensity is of great interest. When the murmur has its point of maximum intensity over the aortic area it is undoubtedly due to vibration of the aortic ring, but when it is elsewhere it must be caused by the impinging regurgitant stream producing vibration in that part of the wall of the ventricle where it strikes, but because of the mechanical differences at the point of the leak the direction of the regurgitant stream is not constant.

The diastolic bruit which may be heard over the great vessels by slightly compressing them with the stethoscope called Duroziez's sign, said to be a valuable sign of aortic insufficiency, is often hard to get, is not always constant and may sometimes be heard in anemia or marked dicrotism. I cannot consider it as more than an interesting curiosity.

A musical quality is not uncommon, in some instances a musical murmur can be heard across the room with the naked ear. This quality of sound is almost always produced at the aortic orifice by the vibration of a sharp edge of tissue, and in such cases it has its point of maximum intensity over the aortic area and is transmitted widely in all directions, especially downward. A musical murmur which recurs with some degree of regularity, say every few beats, is caused by a shifting stirrup of tissue which hangs from the center or edge of a diseased valve. When a musical murmur is localized at some other point than the aortic area it is due to the regurgitant stream producing vibration in a false band or chordæ tendineæ in the ventricle itself.

Roughness of quality is always due to conditions of the aortic orifice, and the murmur in such cases has its point of maximum intensity over the aoritc area, except in the so-called "Austin Flint murmur," which is localized at the apex and will be considered later.

Uniformity of intensity is uncommon, such murmurs are usually heard between the apex and end of the sternum. They have the swing of systolic murmurs and are often mistaken for such.

Shortness.—When a murmur is short and occupies an unusual period of the diastolic pause, one should always suspect some other cause than true organic aortic incompetency. In the cases which I have seen the cause has been due to a relative insufficiency from aneurisms, exceedingly great arterial pressure, or imperfect valvular coaptation from senile degeneration and anemia; the murmur being produced during the height of the arterial pressure and ceasing as it diminishes. Such murmurs vary with the arterial pressure and force of the heart's action, they come and go so that we may be led to think that we have confused an intense impure aortic sound with a murmur, but actually the murmur was present and disappeared. Murmurs which are short and occupy an unusual point of the diastolic period are almost always cardiorespiratory, but these will be considered later.

2. *Pulmonary Insufficiency.*—The diastolic lesion produced by this affection is much more constant in its quality and site than that of aortic insufficiency. Its maximum intensity is always just to the left of the sternum in the second or third spaces, it is transmitted by the wall of the right ventricle and unless intense is not heard at the apex. Its quality is usually more harsh and rumbling than the murmur of aortic insufficiency, and follows the first sound or systolic murmur which accompanies it more immediately in most cases and often seems like a continuation of the latter. The rumbling vibratory character is due

* Read before the St. Luke's Alumni Society, Dec. 11, 1903.

to the less rigid pulmonary ring and the lower tension of the lesser circulation. Pulmonary murmurs may be soft and blowing, but a musical quality is exceedingly rare.

3. *Persistent Ductus Arteriosus.*—A diastolic murmur from this cause is very infrequent. It resembles that of pulmonary insufficiency in quality and site, but it is usually shorter and more continuous with the systolic; this condition may be distinguished in some cases from pulmonary stenosis and insufficiency by less cyanosis, less clubbing of the fingers, a small right ventricle, and the more frequent presence of an accentuated pulmonary sound.

4. *Aneurismal Diastolic Murmurs.*—These are of two kinds; the first and most important is due to an actual aortic insufficiency, either relative, from stretching of the aortic ring or from implication of the valves in a degenerate process. In the majority of cases such murmurs have no distinguishing features in quality or position from the ordinary murmurs of aortic insufficiency, but in some instances the wall of the aneurism transmits the murmur to a much greater distance, especially to the right, while its quality may be more roaring, churning, or foundry-like.

The second variety of diastolic murmur caused by aneurism is quite uncommon; it is produced by the blood being forced out of a distended aneurismal sac through its narrow opening during the diastole. The point of maximum intensity is variable and depends on the situation of the aneurismal sac, it may be transmitted by the blood current or along the wall of the aneurism, it is a short murmur, and the intensity varies, depending on the force of the blood current and the size of the aneurismal cavity. Other signs of aneurism are usually present and are necessary for a correct diagnosis.

5. *Mitral Stenosis.*—In this condition three varieties of the diastolic murmur may be found. The most common and important is the so-called presystolic, of all murmurs this is one of the most unchangeable in its site and quality. Its maximum intensity is always at the apex, it is usually localized, but may be heard in some cases a short distance on either side of the apex. It is rough, rumbling and crescendo, running into the first sound which is short, high pitched and intense. The cause of this short intense first sound has been thought to be due to the small amount of blood in the left ventricle and the consequent ease with which it can empty itself, but this would hardly explain the sound in aortic insufficiency with a Flint murmur. I believe the most probable explanation is, that the coarse vibrations at the auriculoventricular septum stimulates the ventricle to a sudden contraction by irritation of the nervomuscular mechanism of the heart.

The duration of the presystolic murmur is variable, often it is a mere suggestion of a presystolic sound, but the first sound is always sharp if the murmur is present. While the presystolic murmur is generally due to mitral stenosis, it may be caused by aortic insufficiency. Such cases were first described by Austin Flint. The most likely manner in which the sound is made is by the forcing back of the mitral valves by the regurgitant aortic stream, an artificial stenosis being thus produced and the opposing auricular stream causing vibration of the mitral valves and a violent eddy. Why this effect is not always produced probably depends on the direction of the regurgitant aortic stream, and the state of tone or dilatation of the left ventricle, which may prevent it from being fully emptied during systole, thus allowing the regurgitant stream to lift the mitral valves. When a Flint murmur is present it is almost invariably accompanied by the regular diastolic murmur of aortic insufficiency, but in exceptional cases it is found alone. To distinguish this murmur from that of true mitral stenosis one must depend entirely on the character of the pulse, the size of the right and left heart, the intensity of the second sounds, and to some extent on evidences of pulmonary congestion and the history of the onset and cause of the disease. It is often impossible to make a correct diagnosis.

The second murmur, due to mitral stenosis, is long and somewhat rumbling or blowing, and occupies most of the diastolic period. The first sound may not be short and snappy. The murmur is heard between the apex and end of the sternum, and can only be differentiated from the murmur of aortic insufficiency by other signs.

The third murmur, due to mitral insufficiency, is heard just inside the apex and sometimes near the end of the sternum. It is very short, soft, and blowing, and occupies the first part of the diastole. It is due to the pent-up blood in the left auricle flowing swiftly into the left ventricle at the beginning of diastole, when the pressure in the ventricle is negative; the ordinary presystolic murmur is almost invariably present in these cases.

6. *Cardiorespiratory Influences.*—Murmurs may be produced in the lung tissue adjacent to the heart by the sudden change in the size of that organ which aspirates or expresses the air. Such phenomena are more common when the play of the lungs has been restricted by pleuritic adhesions.

Systolic cardiorespiratory murmurs are quite frequent and have often been described, but the diastolic have received very little attention, although they are by no means uncommon. They are frequently mistaken for organic murmurs, and such errors are serious when made by insurance examiners, or by the family physician. During the past year I have seen two men rejected by insurance examiners, and a young man who had been forbidden athletic sports for three years by his medical advisor on account of the presence of this murmur. They may be found anywhere along the anatomical border of the heart, occasionally under the clavicle on either side, more commonly the left, their most frequent sites are just above and inside the apex or in the fourth space just to the right of the sternum. I have never heard a diastolic cardiorespiratory murmur posteriorly, although the systolic is not uncom-

mon there. They are fairly well localized, more so than the systolic, but if intense they may be transmitted some distance. They occupy a portion of the diastolic period, but what portion is not fixed. As a rule it is heard immediately after the systole. The quality is fairly constant, either soft and blowing, or puffing. The intensity varies with respiration; there is always a certain period in the respiratory cycle when the murmur is at its greatest intensity, and another when it can scarcely be heard or is wholly inaudible. At its point of greatest intensity, if the breath is held the murmur is constant and uniform. In some cases the respiratory influence is very slight, even producing no greater change than may be caused by respiration on ordinary organic murmurs. These cases are very difficult of diagnosis, but the short duration of the murmur, its early occurrence and soft, puffy quality, together with the absence of organic signs, should make the diagnosis clear, but if the heart is enlarged, the pulse full and quick, and the second aortic sound accentuated, the problem may be exceedingly difficult or impossible to solve on the first examination.

7. *Pericardial.*—When pericarditis is present, both systolic and diastolic murmurs are heard at some time during its course, their time of occurrence alone distinguishing them. The quality is superficial, rubbing or grazing, soft or harsh. The intensity varies, often being loud and harsh, or very soft, but as a rule it is of medium intensity. Pressure with the stethoscope may intensify the murmur. The duration is generally shorter than that of endocardial murmurs, and the sound may be broken, making two short murmurs. It follows the first sound or murmur almost immediately, giving a to and fro quality. Its site at the beginning and toward the end of the disease is most frequently in the third and fourth spaces, just to the left of the sternum, but may be heard in severe cases quite widely to the right and left of the sternum, and as high as the first rib. It is not transmitted far. A very soft murmur may be difficult of diagnosis; on account of the faint apical impulse, massive cardiac dulness, especially upward, and feebleness of the first sound, which is often more intense upward over the third or fourth spaces, its pericardial nature may be determined.

8. *Pleuropericardial.*—This murmur differs from the former in only four main particulars; the site is always at or a little above and inside of the apex; respiration has a decided influence, for at some period of the cycle the murmur may disappear or become fainter, and there is always some point during the respiratory cycle when, if the breath is held, the murmur is best appreciated; other signs of pericarditis are absent; indications of dry pleurisy are almost always present.

The cases which I present illustrate some of the difficulties which I have set forth in this incomplete description of the diastolic murmur.

Case I.—Male; thirty-six years old; driver. His general health has always been good. No rheumatic history. He had a chancre eight years ago, no positive secondary symptoms. He came under my care a few weeks ago for pains in the right shoulder and the side of the chest. The cause of these was rather vague and did not improve under salicylates or potassium iodide. There were no other complaints. On physical examination nothing was found but a very slightly enlarged heart, and a very soft diastolic murmur in the fifth space just to the left of the sternum, which on some days was impossible to hear. The pulse was about ninety, somewhat larger and quicker than normal. It alone would give no clue to the diagnosis. I mention this patient to illustrate the ease with which such a case can be overlooked, as many of my best fourth-year students have examined him, but no one has made the diagnosis of aortic insufficiency.

Case II.—Male; housesmith; twenty-eight years old. He has a marked history of inflammatory rheumatism. Four years ago he was in St. Luke's Hospital for several weeks with an attack of acute articular rheumatism, and endocarditis with marked embarrassment of the heart action. This was not his first attack. He came to the out-patient department very soon after he left the hospital. The physical signs then were about the same as they are now. The heart is greatly enlarged in all directions, a loud diastolic murmur of a blowing quality is heard over the aortic area and is transmitted to the apex. At the apex a very loud systolic transmitted to the axilla is heard. The point of special interest is a localized, high-pitched, musical murmur in the third and fourth spaces close to the sternum. I believe that the musical sound is made in the ventricle through the vibration of a band. The case is also of interest because the man has been able to do hard work for three years.

Case III.—Male; thirty-two years old; porter. He has been under my care for some years at the New York Dispensary, attending irregularly, and usually appearing after a drunken spree. There is no rheumatic history. He had syphilis twelve years ago. He presents a very typical appearance of aortic insufficiency, throbbing vessels, big left heart, loud diastolic murmur with maximum intensity over the pulmonary area. The chief interest lies in a presystolic murmur at the apex which is a good example of the so-called Austin Flint murmur. The pulse, absence of a large right heart, and syphilitic origin rule out mitral stenosis.

Case IV.—Male; thirty-five years old; janitor. He has had no rheumatic or syphilitic history. He has had a chronic nephritis with considerable albumin for an unknown time. The heart is very slightly enlarged. In the second space just to the right of the sternum there is a visible and somewhat palpable pulsation, over which there is a moderate dulness. A diastolic murmur is heard over it and is transmitted toward the apex. The pulse is not quick or large, undoubtedly being influenced by the increased arterial tension and the presence of a small aneurism at the sinus of Val-

salva, but the murmur itself is due to an actual insufficiency of the implicated aortic valves.

Case V.—Male; thirty-seven years old; plasterer. He has always been strong and well, except for myalgic pains, which brought him to the dispensary. He has a moderately enlarged heart, and a strong pulse. Above and inside the apex there is a short diastolic murmur which is heard over a small area, its intensity is not uniform, but varies with respiration. Because of the pulse and character of the murmur it is undoubtedly an example of the cardiorespiratory variety.

Case VI.—Male; twenty-six years old; cutter. He came to the New York Dispensary a year ago for the same symptom of which he now complains, that is, dyspnea on exertion. He made two calls then and has not consulted a physician until last week, when he returned with the same difficulty. The physical signs show that the apex beat is one inch to the left of normal and rather diffuse, but not forcible. The right heart is apparently not enlarged, although it is impossible to determine a moderate enlargement by percussion. At the apex there is a very distinct, soft purring thrill and presystolic murmur, the first sound at the apex is short and sharp, but the second sound can be distinctly heard as well. Over the base the second sounds are of equal intensity. The pulse is large, soft and rather quick, about 80 to the minute, at the angle of the jaw a very distinct throbbing is visible. It would be impossible to regard this case as one of mitral stenosis, but although the symptoms and signs, except for the murmur, point to aortic insufficiency, one hesitates to make that diagnosis without the usual diastolic murmur.

Since presenting this case a soft diastolic murmur has appeared at the end of the sternum.

111 West Forty-seventh Street.

THE INFLUENCE OF BOVINE TUBERCULOSIS ON HUMAN HEALTH.*

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Had your invitation to speak on this subject come to me in the year of the London Congress on Tuberculosis, I would have been obliged to have depended largely on theoretical considerations to defend my position, although even at that time I had collected a certain amount of evidence which convinced me of the correctness of my belief in the essential unity of tuberculosis as seen in man and in cattle, and in the intercommunicability of the disease between these two species of mammalia. Some of this evidence was presented at that Congress. The stand taken by Koch at that time had the effect of stimulating research in practically every part of the world, so that to-day we are in possession of facts that seem to me to be irrefutable. I will therefore confine myself as nearly as possible to well established facts, and to the conclusions which they justify.

Study of Tubercle Bacilli.—Study of cultures of the tubercle bacillus isolated from various types of tuberculosis in man and in animals has not yet shown differences which enable us readily to determine the origin of a given culture. The most marked and constant difference is the greater pathogenic power shown by the bovine bacillus for all experimental animals which have been used, with the possible exception of swine, which in my experience have proved so very susceptible to both races that it is hard to draw a distinction between them. Koch, however, includes swine among the animals which show a much greater susceptibility to bovine cultures than to those from human sources. The list of animals for which this greater susceptibility has been shown is a long one, including horses, cows, asses, goats, sheep, dogs, cats, rabbits, guinea-pigs, and our nearest relative, the monkey. The result is the same by every method of inoculation tried. It would then be a most remarkable and anomalous circumstance for man, who is one of the most susceptible of all animals to be immune, or even strongly resistant, to the most virulent race of tubercle bacillus yet discovered. It has most certainly not been shown that man possesses this immunity, and no one has been able to discover any special means of defense in the human body against the bovine tubercle bacillus. Until this is done we are bound to believe that, in common with all other mammalia, he shares this susceptibility to its ravages.

Variation of Virulence.—While it has been shown conclusively that a greater pathogenic power is the most marked distinguishing characteristic between the bovine and the human bacillus even this is not constant. You will recall, however, that Koch in 1901, held that this difference in virulence gave us a sure method of diagnosis between the two races. If the culture had power to cause general infection in cattle it was then certainly of bovine origin, while failure to do this proved it to be human. Replying to this, Prof. McFadyean said, "If a low degree of virulence for cattle is to be taken as the distinguishing feature of human bacilli there will be no difficulty in proving that the human disease is sometimes transmitted to the lower animals."

Confirmation of this has recently come from the Tuberculosis Commission appointed by the Imperial Sanitary Office of Germany. Kossel, in his preliminary report says that among seven cultures examined by them, four of which were isolated from cattle and three from swine, one was found which caused only infiltration at the point of inoculation, with some caseous foci in the related prescapular gland, and in one mediastinal, but without the generalization usually seen following inoculations of bovine bacilli. He concludes that "among bovine tubercle bacilli

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there can also occur differences with regard to virulence."

Koch and his followers are very active in making discoveries which have been known elsewhere for a long time.

Pathogenic action of the bovine tubercle bacillus for man.—Accidental inoculations in the laboratory and in post-mortem work on cattle have given us some opportunity of observing the effects of the bovine tubercle bacillus on man. I have reported four such cases, all of which resulted in the formation of typical lesions which required excision before healing took place. In two of these cases the bacillus was isolated and studied, excluding the possibility of infection from human sources. In one instance the recovered organism was compared with the original culture. A number of similar cases are on record. A common feature of all of them is their resistance to treatment, final cure resulting only after radical excision. In a case recently reported by Troje, which seems to be free from the objection usually raised, the disease extended up the arm and two years after the original infection had involved the glands of the axilla and sub-clavicular space. In a few instances general infection and death is reported to have followed these accidental inoculations, but the evidence is not entirely conclusive. A careful study of these wound infections, and comparison with similar infections with human tuberculous material, shows (1) that the bovine bacillus grows well in the human body under the most unfavorable circumstances producing typical lesions, and (2) that it shows for man at least as great pathogenic power as the human bacillus under identical circumstances. As the skin is known to be the most unfavorable tissue for the tubercle bacillus, we are justified in holding that organs and tissues which are known to be favorable soil for the growth of the human bacillus will prove equally favorable for the bovine organism.

Clinical Observations.—Clinical studies have not given us a great deal of aid in the solution of the question before us. We have, however, some 38 cases on record in which the evidence is very strong and convincing. All of them are open to the same criticism, as it is plain that all other sources of infection have not been excluded with certainty. This objection will always apply to clinical observations to a greater or less extent, but I do not consider that it is fair to exclude them on this account. With respect to other diseases such as typhoid fever, diphtheria and scarlet fever, we constantly accept without question evidence which is not nearly so strong as that we are asked to reject when tuberculosis is concerned. Much of the evidence on which the general belief in the respiratory invasion of tuberculosis rests is lamentably weak. If we question the accuracy of those cases in which death has followed accidental inoculation, or those other cases where milk from tuberculous cows appears to have been the cause of the disease, for the reason that all other sources of infection have not been excluded, we should apply the same strict methods of examination to those cases in which infection appears to have taken place through the respiratory tract and by exposure to the human disease. This has not generally been done. In our clinics and hospitals it is the rule to question the patient as to his or her family history, and if the answers show exposure to another case of phthisis, the source of infection is considered as demonstrated. No effort is made to exclude the use of tuberculous meat and milk, even if it were possible to get reliable data concerning these points. In this way has the great mass of our statistics concerning infection in tuberculosis been collected. The belief generally held that dried and pulverized sputum is the general infecting material is theory pure and simple. It is supported by very little experimental evidence, and no exact clinical evidence that I am aware of. Do not understand me to say that I disbelieve these teachings, for I do not; but I protest that Koch and those who follow him in disregarding the importance of bovine tuberculosis in relation to the human disease set up a standard of accuracy for their scientific opponents which they do not honor themselves.

Primary Intestinal Tuberculosis.—Those who doubt that tuberculous food products play any considerable part in the causation of human tuberculosis base their opinion mainly on the alleged rarity of primary intestinal tuberculosis. Koch says "that a case of tuberculosis has been caused by ailments can be assumed with certainty only when the intestine suffers first, *i.e.*, when a so-called primary tuberculosis of the intestine is found." It requires but little thought to see how misleading this statement is. It leaves out of consideration infection through the tonsils and upper digestive tract, and recent experimental work proves that no such dogmatic statement can be made.

Passage of Tubercle Bacillus Through Healthy Intestine.—As long ago as 1890, Dobroklonski working under Cornil, showed that the tubercle bacillus can penetrate the wall of the intestine of some animals without causing any demonstrable lesion, and that it does not require long to do so.

The late Prof. Nocard observed that if he drew blood from horses at certain periods of digestion, the serum would become contaminated even if divided into small lots of 100 c.c. On the other hand, if the bleeding was done during fasting, the serum could be preserved in liter flasks without loss. In seeking an explanation of this phenomenon, two of his students, Desoubry and Porcher, found that the chyle of dogs fed with soup containing considerable fat showed many colonies of bacteria when plated. When a plain bouillon without grease was given the chyle was free from bacteria. Nicolas and Descos have shown that practically the same thing holds true for the tubercle bacillus when ingested with fat. During the winter of 1902-1903, I have made similar experiments at the laboratory of the State

Live Stock Sanitary Board of Pennsylvania. The method was as follows: After keeping a dog under observation for some days to make sure that it was healthy, a purge of castor oil was given in order to rid the intestine of any substance which might injure the mucous membrane mechanically. At the end of this time a single meal consisting of equal parts of warm water and melted butter made into an emulsion, in which tubercle bacilli were stirred, was given. The dog was killed after three and one-half to four hours, during active digestion, and as much chyle as possible collected, together with the mesenteric glands. With this material guinea-pigs were inoculated. In 8 out of 10 dogs it was found that tubercle bacilli had passed through the intestinal wall, and from the extent of the lesions found in the guinea-pigs I feel justified in saying that the bacilli had penetrated in large numbers. In every case the entire intestinal tract of the dogs was carefully examined, and in two microscopic sections were made from several portions of the gut. In no case was any lesion found. These experiments prove that tubercle bacilli can easily penetrate healthy mucous membrane without leaving any trace of their path.

When we remember how directly the chyle passes up the thoracic duct and is thrown into the venous circulation near the heart, from which it passes immediately to the lungs, it does not seem unreasonable to claim that an infection through the intestine may first show itself in the lung, or, at least, that the lesion in the lung will be so nearly contemporaneous with that of the intestine that it will be impossible to say which is primary.

I have here the intestines and lungs of two monkeys which were infected by feeding with pure cultures of tubercle bacillus in a series of experiments on the comparative virulence of the human and bovine organisms. In both the lungs are extensively diseased. We were unable to find any lesion whatever in the intestine of one, and in the other (A45007) there was only a slight lesion, with caseation of three glands in relation to the upper portion of the tract. In this animal there was, however, enlargement and caseation of the cervical lymph glands, pointing to invasion through the tonsils or pharynx.

If these two specimens were shown without history most pathologists would pronounce them cases of respiratory infection, yet they were kept under conditions which precluded this possibility, and were tested with tuberculin before the experiment began. May not these experiments explain many of those numerous cases seen in children in which pathologists are unable to decide the mode of invasion? In the series of autopsies reported by Northrup in 34 out of 125 cases he could not determine the portal of entry.

Post-mortem Statistics.—I will not go into the consideration of post-mortem statistics, because I understand they are to be treated in another paper this evening. The figures concerning the primary lesion are not at all uniform. In England only have we anything like uniformity in the findings, which show a considerable percentage of primary intestinal tuberculosis for that country. It must be remembered that a single positive result is worth more than many negative ones, and it is impossible to explain away the figures given by such men as Carr, Guthrie, Shennan and Still.

Infection Through the Tonsils.—The numerous observations made of late years leave no doubt that the tonsils sometimes act as the port of entry for the tubercle bacillus. As well put by Baup, "discussion is only possible as to the greater or less frequency of these lesions, and their pathological importance," a position sustained not only by the work of other observers but by his own, in which he examined the tonsils from those cases only in which tuberculosis of the lungs was absent and other ports of entry could be excluded. Dieulafoy, by the inoculation of guinea-pigs, found tuberculosis in 15 of 96 cases. Latham, who was careful to employ only the interior portions of the tonsils, in 45 consecutive cases of children from three months to thirteen years of age, seen at autopsy, found seven which were tuberculous. One of the most recent studies of this subject is that of Friedmann, who examined the tonsils obtained from 91 children at autopsy, and 54 cases removed by operation, all but one of the latter under five years of age. Of the 91 cases, in three there was tuberculosis, probably not primary; in five there was tuberculosis, probably primary, with secondary involvement of lymphatic glands, intestine, and bone; in one the tonsils showed many tubercles, giant cells, and tubercle bacilli, the rest of the body being free; in seven (two with and five without tuberculosis in other parts of the body) the tonsils contained typical giant cells, but no bacilli could be demonstrated; in three giant cells attributed to other causes were found; in eleven, which showed extensive tuberculosis of other parts of the body, the tonsils were free, but showed scars; in four the tonsils were free, there being tuberculosis of the internal organs; in three bacilli were demonstrated in smear preparations, though no tubercles were found. In the remaining 54 cases tuberculosis was not found in any part of the body. Only one of the operative cases showed primary tuberculosis.

Friedmann concludes that tuberculosis of the tonsils is quite common in children, and that the infection takes place directly from food, and not through the lymph, blood, or by inhalation. In swine and in cattle infection through the upper digestive tract is very common.

Many corroborative facts could be added, but enough has been said to show the fallacy of looking exclusively in the intestine for evidence of infection by food. The lymph channels leading from the upper digestive tract empty into the large veins near the heart, so it is not hard to understand how tubercle bacilli which may penetrate the tissues in this region soon find their way to the lung. In illustration of what I have

said, I show here photographs of the tonsils and lungs of a pig infected by feeding a pure culture of tubercle bacillus. This animal was one of four, two of which were fed human and two bovine bacilli. All of them contracted general tuberculosis, most marked in the lungs, and ending in death. Three of the four showed lesions like those shown, but in only one could any injury of the intestine be found.

Isolation of Bovine Tubercle Bacilli from Human Lesions.—The most direct and positive proof that bovine tuberculosis is responsible for a certain amount of tuberculosis in man is given by the finding of the bovine bacillus in human lesions. With this object in view I began in 1900 to look for cases of intestinal tuberculosis in children as those most likely to be caused by the bovine bacillus. In June, 1901, I succeeded in isolating from the mesenteric glands of a child sent to me by Dr. Alfred Hand from the Children's Hospital in Philadelphia a culture which has been designated BB. This culture showed a most intense virulence for cattle, killing two calves in seventeen and twenty-seven days respectively, and a six year old cow in seventeen days. Excepting in the first generation when some irregularity of staining was noticed, this culture has always shown every characteristic of the bovine tubercle bacillus, and must be regarded as having come directly from cattle. I have since isolated two other cultures from mesenteric glands of children which have unusual virulence. Culture U was considered an ordinary human culture until it was used in some feeding experiments on dogs, when it showed such unexpected virulence that I inoculated a calf with it. The animal was killed after forty-six days, as it was moribund. The autopsy showed a general infection.

Recently I have obtained another culture which lies between BB and U, and which I consider bovine. It produces general infection and death in rabbits on subcutaneous inoculation, and killed a calf weighing 255 pounds in thirty-five days. The late Dr. De Schweinitz isolated the tubercle bacillus twice from intestinal lesions in children, and Dr. Theobald Smith has found it once in such cases. In Europe Fibiger and Jensen report having found it three times, and Kossel speaking for the German Tuberculosis Commission, tells us that out of 16 children examined, four proved to have been infected by the bovine tubercle bacillus. Two of these four cases are described as "miliary tuberculosis," one starting from a bronchial adenopathy, and the other from a mesenteric adenopathy. The remaining two were intestinal tuberculosis. It appears from this that even those cases which show the primary lesion in the bronchial glands, and which are considered to be so certainly of respiratory origin, may be caused by the bovine tubercle bacillus.

When a Commission which is evidently doing its best to sustain Koch has to acknowledge that 25 per cent. of the children examined by it show lesions due to the bovine tubercle bacillus it seems time to abandon the doctrine that tuberculosis of cattle has little or no effect on human health.

It appears to me that the case might well rest on the positive evidence afforded already by the discovery of the bovine germ in children.

Frequency of Bovine Infection.—I will not attempt to say what proportion of children die of bovine infection. If I have sustained my contention that the two diseases are essentially the same and intercommunicable, it is evident that the number of children in any given locality who become infected from bovine sources will vary directly with the prevalence of tuberculosis in the cattle of that district, and with the extent to which unsterilized milk is used as food.

In order to determine the percentage of children who derive their infection from cattle it would be necessary to isolate from a large number of those who died from tuberculosis the offending organism, and to determine its origin. The cost of this is prohibitive for private laboratories, and it must be undertaken at the public expense if done at all. The findings already published are too few in number to form the basis of an estimate, but they show conclusively that it is not a rare occurrence to find the bovine tubercle bacillus in the lesions of children. The German Commission found it in four out of 16 cases examined; De Schweinitz twice in four cases; Theobald Smith once in five cases, and at the laboratory of the State Live Stock Sanitary Board I have found it in two out of five cases. Febiger and Jensen have found it in three instances.

Extent of Tuberculosis in Cattle.—I will not weary you with an array of statistics showing the prevalence of bovine tuberculosis. It is well known to be a scourge, and to be especially prevalent in milch cows of the herds on the dairy farms near large cities,—at least this has been the case in the past, to a great extent. The introduction of certified milk has had a widespread educational effect, and has done much to better the condition of many herds, directly as well as indirectly.

I hold strongly to the opinion that it is not only the cow with tuberculosis of the udder that is dangerous, though this is no doubt an especially perilous condition. Dilution with the milk of healthy cows undoubtedly lessens the infectiousness of such milk but cannot make it safe. Dr. Theobald Smith showed in 1893 that the tubercle bacillus could be found in the milk of tuberculous cows, when the udder was free from disease, so far as the naked eye could tell. In a series of experiments with the mixed milk of five cows which reacted to tuberculin, but were in good physical condition, I found it infectious for 15.8 per cent. of the guinea-pigs inoculated. No attempt was made to concentrate the bacilli; on the contrary, the whole quantity of the milk was well shaken in order to imitate natural conditions. No lesion of the udders could be found during life or after death of the cows.

Rabinowitsch and Kempner found that 10 out

of 15 cows, which reacted to tuberculin but showed no evidence of udder disease, gave milk containing tubercle bacilli. They conclude that "milk may contain tubercle bacilli; first, in beginning tuberculosis, without discoverable disease of the udder; and, second, in latent tuberculosis that can be detected only by the tuberculin reaction;" also, "milk from cows that react to tuberculin must be suspected of being infectious in every case."

Conclusion.—At the present time the weight of the available evidence is in favor of the view that the chief source of infection in children, as well as in adults, is the human tubercle bacillus, and that the portal of entry is the respiratory tract. It has, however, been proven conclusively that the bovine tubercle bacillus is responsible for a certain proportion of the deaths from tuberculosis in children, and there is strong evidence at hand to show that the number of children infected from bovine sources is quite large. Whether the number be large or small, it is none the less our duty to guard against the use of milk from tuberculous cattle for food.

CLINICAL ASPECT OF CHRONIC MYOCARDITIS.*

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CLINICALLY, the ills which befall the heart may be divided into two broad classes: (1) Those due to pathologic changes in the valves, causing deformity and impaired function, and later, secondary changes in the heart muscle, and (2) those due to pathologic changes in the myocardium, causing cardiac insufficiency accompanied by enlargement. Clinically, structural disease of the heart means either deformed valves or weakened walls, leading sooner or later in either case to cardiac insufficiency with all its attendant evils.

Unfortunately, in the past, our text-books have given but little space to the consideration of chronic myocarditis, hence it is an imperfectly understood and much overlooked condition.

It is not my purpose in this brief paper to discuss the pathology or etiology of chronic myocarditis, except for the purpose of rendering more clear the clinical aspect of the subject.

Pathology.—Much diversity of opinion and confusion exist as to the pathologic changes present in chronic myocarditis. In this paper the term chronic myocarditis is used in its broadest sense to include any morbid changes which manifest themselves clinically in the weakened myocardium, the result largely of fibroid or fatty changes in persons at or beyond midlife, previously free from valvular disease. The microscope reveals a variety of pathologic metamorphoses, pointing as a rule to fibroid or fatty changes in the heart muscle, either circumscribed or diffuse in character.

Chronic interstitial myocarditis may and not infrequently does represent a later reparative stage of acute myocarditis, but more often it is secondary to conditions interfering with the nutrition of the heart, such as gradual narrowing of the coronary arteries or their branches, the result of endarteritis, atheroma, arterial fibrosis, or the more sudden and complete occlusion of the vessel by an embolus or thrombus. Localized changes, fibroid or fatty in character, are most frequently found in the walls of the left ventricle, posteriorly, toward the apex, causing local weakness and thinning, with pouching of the myocardium, aneurismal in character.

Etiology.—Males suffer from myocardial weakness much more frequently than females. The pathological changes in the myocardium are of slow and progressive development, the result of long continued injurious influences. These injurious influences, which fret and embarrass the heart, may come from within or without the organism, or, in some cases, there may be a union of both. My observation leads me to believe that the long-continued, even moderate use of alcohol, especially when associated with the use of tobacco, is one of the most potent factors in the causation of chronic myocarditis as we meet with it in American men. It is astonishing how promptly alcohol and tobacco aided by strong coffee (two or three times daily) will disturb the cardiac rhythm of the active, nervous, susceptible man of affairs. In susceptible persons disturbance of cardiac rhythm and rate, associated with an irritable condition of the heart, is noticeable soon after the tobacco habit is formed; in the less susceptible its injurious effects are delayed until midlife or beyond, and are observable in the form of more pronounced disturbance of rhythm, rate and force, associated with palpitation and precordial discomfort.

Tobacco, by increasing the rate and disturbing the rhythm, thereby increasing the labor as well as perhaps interfering with the perfect nutrition of the heart muscle, leads gradually to a degenerative change, and alcohol acts even more promptly in producing sclerotic changes.

Gout or the gouty diathesis, by paving the way for early stiffening of the arteries, including changes in the coronary arteries, is often visible in the background as a causative factor.

Syphilis, like gout, is often responsible for myocardial disease, especially fibroid changes. Among the more frequent causes may be enumerated coronary disease, general arterial fibrosis, chronic renal disease, endo- and pericarditis, anemia, phosphorus, etc.

Symptoms.—The rational symptoms of myocardial insufficiency, at first are usually vague and inconstant; not alone is this true of a series of cases, but of the same case at different times. Death may occur suddenly without evidence of symptoms or physical signs. Breathlessness, amounting to dyspnea on exertion, is one of the earliest and most constant symptoms. Slight vertigo, headache, precordial distress, palpitation

* Read before the St. Louis County Medical Society.

and later attacks of angina are among the more common symptoms. The pulse becomes irregular in rate, rhythm and force; perchance intermittent. Slight overwork or worry precipitates an attack of palpitation. Later dyspnea becomes more pronounced and constant, with attacks of severe cardiac asthma, especially at night. In other cases the breathing, waking or sleeping, is of the Cheyne-Stokes type, often accompanied by pulmonary congestion, edema, and later, hydrothorax; the latter often before evidence of fluid is noticeable elsewhere. In still other cases precordial pain occurs and later attacks of true angina, especially if extensive coronary disease is present. In other cases, especially of fatty heart, the patient may manifest muscular twitchings, pseudo-apoplectic attacks, with transient hemiplegia.

Without wearying you longer with a recital of symptoms, I feel sure you are all familiar with the following clinical picture: An active business man of sedentary habits, a free user of tobacco, a daily, moderate user of alcohol, and a generous liver, begins to suffer from breathlessness on the slightest extra exertion, also from precordial discomfort at intervals, especially if effort follows a full meal. Excitement, overwork or worry precipitates palpitation; he becomes painfully conscious of the presence of a heart; consults his physician who finds a pulse, usually irregular in rate, rhythm, force or tension, often intermittent. A physical examination of the heart and vessels reveals a weak, diffused impulse in the nipple line; arteries unchanged or slightly stiff. On careful percussion the deep cardiac dulness is found slightly increased. On auscultation the heart sounds may be practically normal, but as a rule the first sound is short and feeble, with variable accentuation of aortic second sound.

Unless the true condition is promptly recognized and counteracted by judicious treatment, we see the shortness of breath, precordial discomfort and other symptoms of myocardial weakness increase from month to month, gradually removing the once active man of affairs from his sphere of usefulness.

Diagnosis.—Chronic myocarditis gives rise to no pathognomonic signs, consequently in the early detection of the disease much depends on the judgment and experience of the clinician. He should keep constantly before him the fact that the vast majority of persons who begin to manifest signs of cardiovascular disease after midlife suffer from myocardial disease, rather than valvular. In the beginning of every suspected case of myocardial disease a complete history should be taken, especially as to age, family tendencies, habits and previous diseases. The urine should be carefully investigated for evidence of renal disease. The diagnosis is based largely on the history, age, state of the vessels, and symptoms, rather than on evidence of physical changes in the heart. In the majority of cases we must be content with a diagnosis of myocardial insufficiency; as to the exact nature of the myocardial changes present in a given case we can only speculate.

Treatment.—For the purpose of treatment we divide the clinical course of the disease into two periods or stages: (1) The period of progressive and often slow development of myocardial weakness, accompanied by breathlessness, precordial distress, irregular pulse, and occasional attacks of palpitation, and (2) the period of advanced myocardial weakness, accompanied by symptoms of pronounced cardiac insufficiency, such as constant precordial distress, dyspnea, cardiac asthma, Cheyne-Stokes breathing, frequent attacks of palpitation, marked irregularity of pulse, angina, tachycardia, bradycardia, Stokes-Adams quartet of symptoms, and later all the symptoms of general engorgement.

Each individual case must be carefully studied as regards the existence of any constitutional vice, the exact state of the heart and arteries, the character of the pulse, and the digestive powers. Having then a clear conception of the patient's condition it should be carefully and frankly explained to him, unless there be some special reason to the contrary, when it should be explained to a friend or relative.

If called to treat a case in the first period or stage our initial endeavor should be to discover and remove every possible cause of cardiac irritation and embarrassment. Our second endeavor should be to so regulate the diet, exercise and habits of the individual as to bring the general nutrition as well as that of the heart muscle up to the highest point and there maintain it. For this purpose, in addition to hygienic and dietetic measures, general tonic treatment, consisting, according to indications, of strychnine, arsenic and iron is indicated. The question of exercise must be carefully considered in relation to each individual case, and with special reference to the condition of the myocardium. In early cases the pathological changes are not far advanced, especially in obese persons, where fatty infiltration, rather than degeneration, is the rule, graduated exercise is especially beneficial.

However, in the large majority of cases of chronic myocarditis absolute rest in the recumbent position will be found necessary for a few weeks at least. The patient's habits should be carefully regulated; tobacco, alcohol, coffee and tea should be interdicted. He should be urged to lead a quiet, orderly and temperate life, as free from worry and excitement as is compatible with our modern civilization. The diet must be adapted to the digestive powers and the wants of the system. All rich, bulky foods, especially those inclined to induce flatulence, should be excluded. The patient should be advised to sleep and eat regularly, eating three meals daily, composed of concentrated, non-fermentative, nutritious food, suited to the requirements of his special case; the midday meal should always be the principal one; no solid food between meals; little or no fluid with meals. Patients should be

urged to sleep at least ten hours out of every twenty-four, with a midday rest of at least one or two hours following the midday meal, in order to minimize the daily labor of the heart; the latter injunction should be rigidly followed during the remainder of the patient's life. In dealing with this condition it is attention to such little things as relate to eating drinking and doing which makes success possible.

In order to intelligently advise and treat an individual suffering from chronic myocarditis, we must inquire carefully into his heredity as well as his past and present condition, also have clearly in mind the etiological factors responsible for the varied pathological changes present in chronic myocarditis. The fat, flabby man of sedentary habits suffering from fatty infiltration of the heart must, of necessity, receive different advice and treatment from that indicated in the thin, spare, ill-nourished individual. In the management of myocardial insufficiency we rely largely on rest, graduated exercise, massage, resisted movements, saline carbonated baths, tonics and saline cathartics. In suitable cases saline baths of a proper temperature aid very materially in restoring myocardial tone.

Before instituting a course of baths, advanced arterial fibrosis and aneurism must be excluded, also advanced cardiac insufficiency with dropsy. It is well to begin with a bath of ten minutes duration, which should consist of fifty gallons of water at a temperature of 98° F. gradually lowered to 94° F. The water should contain one per cent. of sodium chloride and one-tenth per cent. of calcium chloride. The temperature of the second bath is gradually lowered to 90° F.; thereafter all baths should be given at that temperature. The percentage of chlorides should be gradually increased, sodium three per cent. and calcium one per cent. and the bath prolonged to twenty minutes. As a rule, carbonic acid should be added by the tenth day. The baths, if beneficial, should render the pulse slower, fuller and more regular; should improve the character of the impulse, and should decrease the area of deep cardiac dulness.

The course of baths should extend over a period of five or six weeks, omitting it every fourth day. The principle underlying the baths is that the percentage of salines be increased, temperature lowered and duration lengthened. I consider it safer, and equally beneficial, to follow the plan suggested above of gradually lowering the temperature of the water during the first few times until the patient becomes accustomed to the cool bath.

Unfortunately, these patients do not present themselves for treatment until pronounced weakening of the myocardium, as shown by marked venous and visceral congestion has occurred, indicating the second or advanced stage of the disease.

We are then confronted with the problem of medicating a weak and degenerated heart muscle in an individual having, in the majority of cases by virtue of his age, suffered certain vascular, as well as extravascular changes, causing increased intra-arterial and cardiac blood pressure. In advanced cases absolute rest in bed must be enjoined, for a variable period, the length of time depending entirely on the indications present in that particular case. The question of the amount of rest indicated or required in a given case of myocardial insufficiency, demands the most careful consideration on the part of the physician in order to avert disaster.

The treatment of advanced cases of myocardial insufficiency, associated with pronounced venous and visceral engorgement, with evidence of beginning anasarca, is wholly palliative, directed to the relief of symptoms and associated complications. For the reduction of the more or less constant high arterial tension present in many cases we rely mainly on the iodides and nitrites. I have found iodide of sodium, in from three to five grain doses, three or four times daily, the most satisfactory agent in dilating the arterioles, thus reducing intra-arterial pressure; the action of the iodides is much more prolonged than that of the nitrites, hence the iodides are to be preferred.

Strychnine, digitalis, strophanthus, sparteine and caffeine render most excellent service in giving tone to the weakened heart muscle, when combined with a vasodilator like soda iodide, nitroglycerin, erythol or sodium nitrite. I desire to emphasize the value of long-continued, very small doses of digitalis, combined with a vasodilator, in myocardial disease associated with arterial fibrosis or chronic renal disease. In case the stomach is irritable, the urine scanty and the arterial tension low, it may be given by the rectum with good results. The morning saline, preferably magnesia sulphate, given one hour before breakfast, aided by an occasional bedtime dose of calomel, adds much to the comfort of the patient and aids greatly in delaying the evil presence of pronounced venous engorgement and anasarca.

In case angina pectoris occurs, the attack should be promptly met by the inhalation of amyl nitrite and the subcutaneous use of morphine and nitroglycerin. In view of the intense suffering associated with angina, the attendant should instruct the nurse, in case of an attack, to immediately administer a generous subcutaneous dose of morphine and nitroglycerin.

In the management of pronounced myocardial insufficiency, with its attendant evils, no method of medication has proved so satisfactory in my hands as that of subcutaneous medication, assisted by rest, massage, baths and saline cathartics. Our resources are sorely tried, in the treatment of this disease—a veritable struggle with mortality, often extending over a period of years—for it should be constantly borne in mind that we are dealing with an incurable condition.

In conclusion, I desire to emphasize the necessity for prompt recognition of the early symptoms of myocardial weakness, believing that no practitioner is justified in ignoring or passing over

as unworthy of therapeutic attention the breathlessness, precordial distress and irregular pulse so frequently encountered after midlife.

ACUTE APPENDICITIS AND ITS MEDICAL TREATMENT.*

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BY way of introduction it may be said that this paper is prepared from the standpoint of the general practitioner, or, to be more exact, from the standpoint of the country doctor; and if any excuse is needed for selecting so trite a subject for your consideration, it may be found in the fact that there are but few diseases he is called upon to treat that give him greater anxiety and more "worriment" than does acute appendicitis.

The reasons for this are obvious. In the first place, this disease is a variable one, and sometimes as treacherous as it is variable; its constitutional manifestations do not always indicate the gravity of the local affection and a case that appears to be progressing favorably for the first few days may, in an incredibly short time, present a condition quite the reverse of favorable. The diagnosis, moreover, is not always as easy as it is sometimes claimed to be. Not a little difficulty may be experienced in differentiating it from such diseases as cholecystitis, enterocolitis, intestinal obstruction, renal and biliary calculo, typhoid fever; in the female, from diseases of the uterus and its appendages, notably pyosalpinx and extra-uterine pregnancy and in the child from pleurisy and pneumonia. Spellissy[1] reports 190 cases with lesions of 20 varieties of structure and 68 species of lesion, all mistakenly considered to be of appendiceal origin.

In the second place, it may be stated that the numerous articles bearing on this disease, that have from time to time appeared in various medical journals and in reports of medical societies, instead of furnishing a trustworthy guide to its treatment, often embarrass and confuse the physician by a medley of diverging, not to say contradictory, opinions. While it is true that a number of the leading surgeons, both in this country and in Europe, especially such as are engaged in abdominal work, have declared with considerable unanimity that acute appendicitis is always a surgical disease from start to finish, and that to treat it medically is not only useless but wellnigh criminal; yet the rank and file of the profession have been slow to accept these teachings, inasmuch as they seemed too radical for general practice, not to mention the fact that at times they had a distinct commercialistic clang, which probably made them less acceptable than they would otherwise have been. But I have no hesitation in saying that as a general rule, to which there may be exceptions, it is easier for the physician and safer for his patient to have the appendix removed in the earlier stages of the disease than it is to trust to medical treatment. It would probably be still safer to have the appendix removed before it became diseased—if, indeed, there was such a time in the history of an individual—and I sometimes think that, while the surgeon is at work the removal in the male of both internal and external appendices might contribute not a little to the solution of certain social and economic problems now bearing heavily on the human family.

If operative measures were always feasible or permissible, in the cases under consideration, little more would need be said, but as they are not, and this is the plea I wish to be distinctly understood as making, I see no reason why their medical treatment should not be considered as we would that of any other disease. The assertion sometimes made that such treatment is not only useless, but even worse, is probably the outcome of a hysterical temperament subjected to undue pressure and not worthy the attention of serious-minded people.

Before proceeding farther in this discussion, it may be well to state what is to be understood by operative measures not being feasible or permissible. They are not permissible in those cases in which, after the attending physician has explained to his patient and to the immediate family the nature of the attack and that the chances for recovery are better with an operation than without, there is a direct refusal to allow it, usually coupled with the statement that Mr. Blank had appendicitis as badly as any one could have it and got well without an operation, and if *he* did, why should not I? The inference is plain: if the patient does not recover, it is the doctor's fault. While it is true that such cases are not so common as they were formerly, since operations have become fashionable and therefore more easily endured, yet I think that every practitioner of wide experience will confirm the statement that even now they are not altogether rare.

Again, if there is not a direct refusal, there is often a conditional assent, which amounts to the same thing, the patient reserving to himself the right to wait and see whether he is going to die or get well before he decides for or against an operation. It may be said that the objections to operative measures are simply a matter of prejudice, possibly of ignorance, twins as they usually are, and that it is the duty of the physician to remove them by the subtle art of persuasion. *Tempus fugit.*

It is, however, in country practice, in the sparsely settled rural districts, away from hospitals, away from competent surgeons and trained nurses, where railroads and telegraphs are few and far between, that we meet with cases in which operative measures are not feasible and where to carry out the surgical dictum To operate! To operate at once! is simply impossible. If the case in hand is a light one, removal to a

* Read before the Lehigh Valley Medical Association, Allentown, Pa., January 28, 1904.

hospital might aggravate it, and if grave, the patient is too ill to warrant the undertaking. The home environments, moreover, of many of these cases are not favorable to the after-treatment of a serious surgical operation. Another consideration which tends to complicate matters not a little: the physician not infrequently sees his patient for the first time some two or three days after the beginning of the disease.

Again, the medical man himself may be handicapped by certain conditions which make it questionable whether he will be in a position to render his patient the proper attention if he is subjected to an operation. It may be in midwinter when the roads are blocked with snow, or in early spring when they are impassable with mud, Obstetrical cases on the outer confines of his "bailiwick" may keep him on the ragged edge of expectancy a day or two at a time, several miles away from his patient. This is no fancy sketch, I assure you, but one that may be duplicated time and again by any one engaged in country practice. These people have bodies, I am quite sure, and souls, I am told, and when they are sick they must be attended to. If the treatment they receive is not the best that medical and surgical science can offer it is probably the best the conditions will allow.

A few words as regards the etiology and pathology of acute appendicitis. It has been but a few years since the younger surgeons, many of whom are now full-fledged, with a world-wide reputation, responding to an invitation to address a country society and selecting for their subject the disease under consideration, deemed it proper to carry with them a pocket full of foreign bodies, ranging in size from a grape seed to a tenpenny nail, to impress on their hearers the relation betweeen cause and effect. Now, it is thought that a true foreign body in the sense of its introduction from without and not of formation within the organism is but rarely the immediate cause of appendicitis. Concretions and fecal matter sometimes found in the appendix, are to be regarded as the result of a diseased condition of this organ, rather than the cause of it. *A subacute catarrhal condition of the intestinal canal* is probably at the bottom of many, if not most, cases. Boardman Reed[2] says it is "the duty of the medical man to prevent the occurrence of acute attacks of appendicitis. Often a long time before its actual outbreak there are symptoms that point to the gathering storm. There is constipation with intervals of diarrhea. There is often persistent and increasing anemia. In the urine there are signs of disturbed intestinal digestion. There is often obstinate gastric disturbance and especially increased acidity of the stomach. This gives rise to a catarrhal irritation of the intestines which also involves the appendix. If these symptoms are relieved before they terminate in pathological changes the appendicitis may be prevented." Frederick Treves[3] says that "in women the outbreak of appendicitis is often coincident with the menstrual period," and Deaver[4] that "the appendix is more liable to destructive inflammation because it is an organ now in the course of disappearance"—an assertion more easily made than proved. Dieulafoy[5] and Golouboff[6] consider acute appendicitis an infectious disease, and Lucas-Champonniére contends that it possesses an epidemic character. Dieulafoy goes so far as to call it a *maladie toxi-infecticuse;* and the more closely it is studied the stronger this view appears. In certain cases of a fulminant type the symptoms point to a toxemia, in some of which an operation within forty-eight hours will disclose a blackened appendix, cecum, and spots of the same character on the ileum and sometimes on the colon; this condition necessitating extensive resections of the intestinal canal.[7]

As in other infectious diseases, the poison may be so virulent, or the individual so susceptible to its influence, one or both, as to overwhelm the system from the onset, thus preventing the normal evolution of the disease and making the diagnosis extremely difficult, if not impossible. What particular germ of the intestinal flora is responsible for the toxins in question is not known to a certainty. Both the streptococcus and the colon bacillus have been accused of being the active agents. Suspicion, however, falls the more heavily on the former, and it is quite possible that when these germs are shut up in a diseased appendix the peculiar environments enable them to develop toxins which under more normal conditions would not appear; but, so far, this hypothesis is little more than a supposition and it remains for the pathologist to favor us with more exact data.

In this connection the observations of Simonin[8] are worthy of consideration. This author presented a series of 18 cases of general infection, severe scarlet fever, erysipelas, mumps and infectious angina, in which were observed positive signs of inflammation of the appendix.

"This organ," he says, "may be considered as a kind of tubular ganglion which takes part during the course of general infection in defense of the economy and receives the germs by the circulation of the blood as well as of the lymph. The first degree of inflammation of this organ, which might be called appendical folliculitis or adenitis, is shown by pain at the point of McBurney. This is also called latent catarrhal appendicitis. The second grade presents a peri-adenitis, that is to say, an inflammation of the cellular tissue around the appendix. The inflammatory reaction may propagate this as far as the mucosa and the peritoneum. Then follows a crisis or a colic of the appendix more or less acute, with distinct pain, nausea, vomiting and signs of peritonitis. Finally, an appendicitis with abscess may develop after perforation has occurred. The streptococcus is certainly the most frequent agent. Most of these appendicites arise from this germ. It is the same germ which is present ordinarily in angina, erysipelas, scarlatina, grip, measles, smallpox, and it may be the initial agent

of infection or associated with some other. Certain authors consider sclerosis of the appendix with obstruction, which one sees so often at autopsies, the result of several attacks of inflammation, latent, subacute or acute, which have occurred during infectious diseases. Such infectious diseases commonly occur during childhood."

If a fresh example were needed to show the limitations of human judgment, the conflicting views advanced from time to time as regards the proper treatment of acute appendicitis would furnish it. In this country most of the talking has been done by the class known as operators who have taken considerable pains to fly the red flag full in the face of their medical confrères; but present indications favor the hope that we have passed the crisis of indiscriminate operating and that we are now on a foundation in which more conservative and more judicious counsel will prevail. At the last meeting of the American Medical Association the surgical section unanimously "agreed that operation for appendicitis should be done the moment the condition was diagnosed, if the symptoms pointed to a limitation of the disease to the appendix itself. After involvement of the peri-appendicular structures the treatment of the case should be along the lines suggested by Ochsner, namely, frequent gastric lavage, absolutely no food or medicines by the mouth, rectal feeding unless it produces pain. Patients who had passed the primary involvement of the appendix, when subjected to this treatment recovered sufficiently to be operated on in 97 per cent. of cases, said operation being followed practically by no fatality."[9]

In his recent paper, read before the Medical Society of Kings County, Dennis says "that the pendulum has swung too far toward indiscriminate operation, but now the introduction of the interval operation has brought the pendulum back to swing within its proper limits."[10] A little more emphatic, but in the same line, are the remarks of an eminent professor of abdominal surgery in one of our medical colleges. In addressing his senior class he said, "Gentlemen, let me impress on you the fact that every case of appendicitis is not a surgical one. The professional cutter who wants to slash every patient who has a pain in his right iliac fossa is a dangerous animal to run at large in any community. Surgery is the noblest of professions, but the basest of trades. Nothing can compensate for the want of skill; but the morbid desire to cut, with no conscience to restrain, makes the doctor very unsafe, although a man of ability."[11]

It is not, however, within the scope of this paper to discuss the surgical treatment of acute appendicitis except in a general way, and then for the light it may throw on the management of those cases in which operative measures are not feasible or permissible, at least during the acute attacks. Personally, I do not wish to be understood as being adverse to surgical interference. I make use of it in my own practice and am fully satisfied that by this means many lives have been saved. On the other hand, I am just as fully satisfied, although it may be difficult to make it so appear, especially to those who are inclined to think differently, that not a few have been lost which would have recovered without it. That this contention is not entirely without foundation is evident from the fact that Dennis, in the paper already cited, says that "the mortality of the simple operation (that is, for catarrhal cases) is appalling in the hands of an inexperienced surgeon. The writer has knowledge of one surgeon who operated on 19 consecutive cases with 19 deaths." Surely it could not be said this surgeon was without experience when he operated on his nineteenth case! Dennis goes on to say that "it would seem that surgery had reached its climax in regard to operation for appendicitis; yet the time will never come when there will be no death rate. Complications are certain to arise that are beyond the control of the surgeon." Until it can be shown that by surgical treatment there is no death rate, is it not ungracious indeed to send out in flaming headlines when some unfortunate has succumbed to this disease: "Another victim of the medical treatment of appendicitis!"? Is it not reasonable to suppose that the result might have been the same under surgical treatment?

Although no reliable statistics are available showing the mortality of this disease under medical treatment, taking one case with another as they occur in general practice, yet it may be fairly approximated at somewhere between 10 and 15 per cent. Ill[12] says that "while there is no doubt that nine out of ten cases of appendicitis may get well without operation, it is the tenth case we want to save"; and Dennis (*loc. cit.*) that "the mortality in appendicitis in all cases under medical treatment is about 16 per cent. . . . and the mortality under surgical treatment about 4 per cent." He fails to state, however, on what authority these assertions are made. Obviously hospital records ought to show the death rate under surgical treatment but not under medical. It is possible that the figures which this author gives are "bold approximations," for in speaking of the advantages of early operations, he cites Fowler, whose 127 cases operated on within forty-eight hours showed a mortality of 17 per cent., just 1 per cent. more than Dennis allows under medical treatment. The truth seems to be that surgical cases, taking them as they occur in a general hospital, show a death rate of somewhere between 5 and 12 per cent. These figures refer to the present time; formerly the percentage was much higher.

No less an authority than Deaver claims that "cured cases are illusory. There is always a focus left in which the tissues are less resistant. Subsequent attacks are almost sure to occur. No one, no matter what his experience, can foretell the course of appendicitis or how severe the next

attack will be. To permit pus formation without surgical intervention is almost a crime. The ordinary medical treatment for appendicitis is little better than high-grade Christian Science."[13]

While I am quite willing to acknowledge that I know but little about gradations in Christian Science, I do know that these cases get well, and what is more, I know they continue to be well, at least as far as the appendical trouble is concerned. Among many disadvantages, the country practitioner, in whose cases of acute appendicitis surgical treatment is often neither feasible nor permissible, has one advantage, namely, an opportunity to study the natural history of the disease. This is denied to his surgical brother, who imagines that every case must be operated on and that right speedily. The country practitioner learns by careful observation that these cases are not so fatal as they are made to appear, that in the vast majority they recover, and that, too, without the troublesome sequellæ of strictures and herniæ which not rarely make life not worth the living. And while it is true that no one can foretell with absolute certainty at the onset of an attack of appendicitis what the result will be, the same is equally true of many other diseases.

It is evident that no fast rules can be followed in the management of acute appendicitis. Much must be left to the individual judgment of the attending physician. In those simple cases, sometimes called irritative or catarrhal, but little medical treatment is needed during the immediate attack. A thorough evacuation of the bowels is of the utmost importance. For this purpose small and frequently repeated doses of calomel may be given with advantage, followed, if necessary, by a saline cathartic or a copious enema thrown well up into the bowels. If it does not offend the stomach, a large dose of castor oil answers the purpose most admirably. If pain is a prominent symptom, small doses of the deodorized tincture of opium are advisable with either hot or cold applications to the affected side. These attacks usually subside in from two to five days, during which time the patient should be kept in bed and allowed but little nourishment and that of the blandest kind. Since about 30 per cent. of these cases have more than one attack an interval operation should be carefully considered by the physician and his patient, who should be instructed not to allow his bowels to become constipated and to exercise discretion as regards his diet. The following mixture, which may be given continuously for two or three months or even longer, if desired, and in which the amount of cascara may be increased if it is found necessary, is to be recommended as a preventive measure.

℞ Sodii salicylatis (pure) ..... ʒij
Ext. Cascaræ sagradæ Fld. (P. D. & Co.) . ʒij
Ol. Menth. pip. ..... gtt. j
Aquæ puræ ..... ʒj
Syrupi ..... q.s. ad ʒviij
M. et sig.: Teaspoonful before each meal.

In cases in which pus formation occurs the attacks are more protracted and more severe. *An abscess is nature's method of curing a diseased appendix;* and while she may not always succeed, she does so more frequently than one would expect. Sir Frederick Treves, in commenting on the advisability of an operation after a first attack, says that "if there has been an abscess in the first attack then I think an operation may be put out of court altogether because that abscess will in certainly 95 per cent. of the cases obliterate the organ and render it harmless."[14] This statement agrees so perfectly with my own observations that I have not the least doubt of its correctness. Since an abscess, originating in inflamed and necrotic tissues in any part of the body, does not usually reach its full development under one week's time or sometimes even longer, we should not expect an appendiceal abscess to show well-marked improvement in a shorter period; but as long as the tenderness does not extend beyond the median line and a highly sensitive and clearly circumscribed tumor is manifest, a hopeful prognosis may be entertained if not always expressed. While it is possible for these abscesses to empty themselves into the peritoneal cavity or to point externally, or for the pus to work its way into the stomach or the bladder, such cases are exceptional. In the vast majority they discharge their contents directly into the intestinal canal and the patients speedily recover. It would not be difficult to cite a number of instances proving the accuracy of this observation.

As in the catarrhal form it is advisable to commence the medical treatment of these cases by brisk purgation, and I agree with Lucas-Championniere in deeming it desirable to keep the bowels open during the entire course of the disease. As pain is usually a prominent symptom, it should be combated by opium and hot poultices, the latter I think decidedly preferable to ice-bags, as they are undoubtedly more agreeable to the patient. It is not necessary to carry the narcotic to the point of stupefaction. I usually advise the occasional smearing of the sensitive area with ichthyol ointment and the internal administration of tablets of salol and phenacetin, one every four hours. If the disease takes on a well-marked septic form, with high fever and profuse sweating, as it sometimes does, quinine, with or without turpentine, is indicated. But little nourishment should be allowed and this of the most easily digested kind. Patients usually do best with as little as possible. The Ochsner treatment, the so-called "starvation treatment," may be admissible in hospital but, for obvious reasons, not in country practice.

Incidentally, it may be said that in those cases in which the abscess ruptures into the peritoneal cavity surgical interference is always indicated. While it is possible to recover under medical treatment they do so but rarely.

Lastly, we shall consider the disease in its fulminating form. Whether this form is a variety of

acute appendicitis or a distinct disease is an open question. As before stated, its symptomatology points to a profound toxemia. It is quite different from a general peritonitis, set up by the rupture of an abscess into the peritoneal cavity. Its course is more rapid; nausea and vomiting are well marked and continuous; the pulse is usually rapid and small, the temperature variable, rarely high, sometimes subnormal; facial expression exceedingly bad; no tumor is apparent and the right iliac fossa but slightly, if any, more sensitive than the left; pain is usually referred to the region about the umbilicus or to the epigastrium; the abdomen is distended and the bowels resist purgative measures; mental apathy or stupor, with intervals of great restlessness, is not infrequent. These are the cases that the surgeon does not see in time and the medical man entirely too soon for his comfort. Whether under surgical or medical treatment they usually terminate fatally, and that, too, within a week, not rarely at the end of two or three days.

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SUMMARY OF AN EXPERIMENTAL RESEARCH INTO THE USE OF ALCOHOL, NITROGLYCERIN AND AMYL NITRATE IN SHOCK AND COLLAPSE, WITH ILLUSTRATIVE PROTOCOLS.

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Alcohol.—In the experiments reported the immediate effect of intravenous administration was observed. The first effect usually noted was a decline in the blood pressure. In the majority of such instances a compensatory rise followed; in a number of instances no change in this respect was noted; in but few was there a rise in the blood pressure. The average length of the stroke of the manometer (height of pulse-wave) was increased. There was no evidence that the heart beat more forcibly. In animals reduced to varying degrees of surgical shock the usual effect of an average dose of alcohol was the production of a further depression; in smaller doses but little effect was noted, while in larger doses a more marked decline often occurred. In a few instances, in deep shock, the administration of a considerable dose was followed by almost immediate death. In a number of experiments with alcohol the decline in the blood pressure was as prompt and as marked as in the administration of the amyl nitrate and nitroglycerin. In no instance, in the normal animal, did death immediately follow the largest dose of alcohol, but the more profound the shock the more marked was the depressing effect of alcohol. In a number of experiments alcohol was given prior to procedures intended to produce shock, but it is not certain that it rendered the animal more susceptible, although it is quite certain that the susceptibility was not diminished.

Nitroglycerin and Amyl Nitrite.—The immediate effect of nitroglycerin and amyl nitrite upon the pulse was an increase in its volume and a decrease in frequency. The immediate effect upon the respiration varied. At times there was a slight increase, more frequently a slowing of respiration. The immediate effect upon the blood pressure in almost every instance was a fall. The decline was usually rapid. There were but few exceptions, and in these there was usually no effect. A rise in the blood pressure was rarely observed. In the latter it was but temporary and usually followed by a fall. The descent in the blood pressure was gradual and rather rapid, the ascent, more gradual. Compensation usually took place in a few minutes, the rising curve being more gradual than the falling. The portion of the curve representing the deepest part of the decline was rounded. Compensation in the majority of experiments was complete. In those experiments in which the later blood pressure was not equal to that before the administration of nitroglycerin it was usually lower. Each time the doses were repeated the effects were almost as marked as the preceding time, even when the repetitions were at short intervals. On administering repeated doses, each twice as large as the preceding one, the effects were proportionately increased. Most of the animals tolerated very large repeated doses; excessive doses produced convulsions and respiratory failure. The blood became darker before the animal died.

During the convulsions the blood-pressure rose and fell with the muscular spasms. In the experiments in which the animal was in deep shock and the blood pressure gradually falling, there was no evidence to show any decrease in the rapidity of the decline. On the contrary, as nearly as could be estimated, nitroglycerin distinctly increased the rapidity of the decline. The effect of nitrate of amyl was in every respect similar to that of nitroglycerin. In many instances the heart beat irregularly after the injection. On the whole, nitroglycerin and amyl nitrite increased shock.

Experiments.—Alcohol.

Dog 1, male mongrel: excellent condition; weight, sixteen kilos. Dog 2, female mongrel; excellent condition; weight fourteen kilos. Dog 3, male mongrel; excellent condition; weight, nine kilos. The tracheal and carotid canula were applied. Ether anesthesia.

At 12:05, dog 1, blood pressure, 140 mm.; stroke, 12 mm.; pulse, 140; respiration, 80. Dog 2, blood-pressure, 112 mm.; stroke, 13 mm.; pulse, 156; respiration, 80. Dog 3, blood-pressure 98

mm.; stroke, 18 mm.; pulse, 152; respiration, 10.

At 12:45, the animal was reduced to shock by skinning and irritating the denuded surfaces. Dog 1, blood-pressure, 115 mm.; stroke, 10 mm.; pulse, 144; respiration, 92. Dog 2, blood-pressure, 95 mm.; stroke, 18 mm.; pulse, 132; respiration, 76. Dog 3, blood-pressure, 50 mm.; stroke, 20 mm.; pulse, 128; respiration, 52. In dogs 1 and 2 the sciatics were electrically stimulated. A sharp fall was recorded, followed by a gradual rise. In dog 3 a sharp rise and fall, with a gradual return to the former level, was noted.

At 12:50, dog 1, blood-pressure, 125 mm.; stroke, 10 mm.; pulse, 132; respiration, 88. Dog 2, blood-pressure, 80 mm.; stroke, 18 mm.; pulse, 132; respiration, 72. Dog 3, blood-pressure, 70 mm.; stroke, 16 mm.; pulse, 132; respiration, 56.

From 12:51 to 12:53 an injection of 22 minims of whisky was administered. An increasing pulse rate, slower respiration and a rise in the blood-pressure in each animal followed.

At 12:54, dog 1, blood-pressure, 130 mm.; stroke, 16 mm.; pulse, 148; respiration, 68. Dog 2, blood-pressure, 75 mm.; stroke, 18 mm.; pulse, 160; respiration, 60. Dog 3, blood-pressure, 70 mm.; stroke, 18.; pulse, 148; respiration, 48.

At 12:55, the sciatics were stimulated, with results similar to the previous stimulation.

At 1:02, dog 1, blood-pressure, 110 mm.; stroke, 12 mm.; pulse, 148; respiration, 76. Dog 2, blood-pressure, 75 mm.; stroke, 19 mm.; pulse, 144; respiration, 56. Dog 3, blood-pressure, 80 mm.; stroke, 16 mm.; pulse, 144; respiration, 48.

At 1:02-30, dog 1, an injection of 22 minims of whisky was administered.

At 1:02-30, dog 2, an injection of 22 minims of whisky was administered.

At 1:03-45, dog 3, an injection of 22 minims of whisky was administered.

At 1:05, dog 1, blood-pressure, 115 mm.; stroke, 12 mm.; pulse, 148; respiration, 64. Dog 2, blood-pressure, 70 mm.; stroke, 20 mm.; pulse, 168; respiration, 52. Dog 3, blood-pressure, 80 mm.; stroke, 16 mm.; pulse, 152; respiration, 44.

At 1:08, the sciatics were electrically stimulated; the results were as before.

At 1:13, dog 1, blood-pressure, 112 mm.; stroke, 10 mm.; pulse, 144; respiration, 80. Dog 2, blood-pressure, 70 mm.; stroke, 12 mm.; pulse, 152; respiration, 52. Dog 3, blood-pressure, 75 mm.; stroke, 13 mm.; pulse, 132; respiration, 48. An injection of 22 minims of whisky was administered in dogs 1, 2 and 3. The results were as follows: Dog 1, blood-pressure, 115 mm.; stroke, 10 mm.; pulse, 144; respiration, 68. Dog 2, blood-pressure, 68 mm.; stroke, 10 mm.; pulse, 152; respiration, 52. Dog 3, blood-pressure, 80 mm.; stroke, 13 mm.; pulse, 132; respiration, 44.

At 1:38, dog 1, blood-pressure, 118 mm.; stroke, 10 mm.; pulse, 150; respiration, 60. Dog 2, blood-pressure, 60 mm.; stroke, 11 mm.; pulse, 156; respiration, 64. Dog 3, blood-pressure, 74 mm.; stroke, 17 mm.; pulse, 152; respiration, 48.

At 1:38-15, dog 1, an injection of 22 minims of whisky was administered.

At 1:38-30, dog 2, an injection of 22 minims of whisky was administered.

At 1:39, dog 3, an injection of 22 minims of whisky was administered.

At 1:41, dog 1, blood-pressure, 115 mm.; stroke, 11 mm.; pulse, 144; respiration, 68. Dog 2, blood-pressure, 60 mm.; stroke, 8 mm.; pulse, 156; respiration, 52. Dog 3, blood-pressure, 70 mm.; stroke, 16 mm.; pulse, 112; respiration, 144.

At 1:43, electrical stimulation of the sciatics was made with former results.

At 1:52-30, dog 1, blood-pressure, 115 mm.; stroke, 10 mm.; pulse, 156; respiration, 64. Dog 2, blood-pressure, 70 mm.; stroke, 8 mm.; pulse, 156; respiration, 52. Dog 3, blood-pressure, 55 mm.; stroke, 16 mm.; pulse, 96; respiration, 40.

At 1:53-15, dog 1, an injection of 22 minims of whisky was administered.

At 1:54, dog 2, an injection of 22 minims of whisky was administered.

At 1:55, dog 3, an injection of 22 minims of whisky was administered.

At 1:56, dog 1, blood-pressure, 115 mm.; stroke, 10 mm.; pulse, 160; respiration, 68. Dog 2, blood pressure, 70 mm.; stroke, 8 mm.; pulse, 156; respiration, 56. Dog 3, blood-pressure, 60 mm.; stroke, 10 mm.; pulse, 96; respiration, 40.

At 1:58, the sciatics were electrically stimulated. The results were not so marked as formerly.

At 2:05, dog 1, blood-pressure, 115 mm.; stroke, 10 mm.; pulse, 152; respiration, 68. Dog 2, blood-pressure, 75 mm.; stroke, 10 mm.; pulse, 142; respiration, 52. Dog 3, blood-pressure, 35 mm.; stroke, 18 mm.; pulse, 108; respiration, 36. Dog 1, an injection of 22 minims of whisky was given.

At 2:05-30, dog 2, an injection of 22 minims of whisky was given.

At 2:06-30, dog 3, an injection of 22 minims of whisky was given.

At 2:08, dog 1, blood-pressure, 118 mm.; pulse, 156; respiration, 56. Dog 2, blood-pressure, 78 mm.; stroke, 10 mm.; pulse, 152; respiration, 52. Dog 3, blood-pressure, 55 mm.; stroke, 16 mm.; pulse, 96; respiration, 36.

At 2:19, dog 1, blood-pressure, 11 mm.; stroke, 8 mm.; pulse, 160; respiration, 56. Dog 2, blood-pressure, 88 mm.; stroke, 19 mm.; pulse, 156; respiration, 44. Dog 3, blood-pressure, 55 mm.; stroke, 14 mm.; pulse, 100; respiration, 36.

At 2:19-30, dog 1, an injection of 22 minims of whisky was given.

At 2:20, dog 2, an injection of 22 minims of whisky was given.

At 2:21, dog 3, an injection of 22 minims of whisky was given.

At 2:22, dog 1, blood-pressure, 118 mm.; stroke, 10 mm.; pulse, 160; respiration, 72. Dog 2, blood-pressure, 84 mm.; stroke, 9 mm.; pulse, 148; respiration, 56. Dog 3, blood-pressure, 60 mm.; stroke, 16 mm.; pulse, 60; respiration, 36.

At 3:02, dog 1, blood-pressure, 100 mm.; stroke, 8 mm.; pulse, 60; respiration, 70. Dog 2, blood-pressure, 70 mm.; stroke, 8 mm.; pulse,

150; respiration, 52. Dog 3, blood-pressure, 55 mm.; stroke, 16 mm.; pulse, 56; respiration, 40.

At 3:55-15, an injection of 22 minims of whisky was administered to dogs 1, 2 and 3.

At 3:56, dog 1, blood-pressure, 115 mm.; stroke, 10 mm.; pulse, 160; respiration, 68. Dog 2, blood-pressure, 70 mm.; stroke, 8 mm.; pulse, 156; respiration, 56. Dog 3, blood-pressure, 60 mm.; stroke, 10 mm.; pulse, 56; respiration, 40.

At 3:58, electrical stimulation was applied to the sciatic nerve. Not so active a vasomotor mechanism was observed as in previous stimulations.

At 4:05, dog 1, blood-pressure, 115 mm.; stroke, 10 mm.; pulse, 152; respiration, 68. Dog, 2, blood-pressure, 75 mm.; stroke, 10 mm.; pulse, 142; respiration, 52. Dog 3, blood-pressure, 55 mm.; stroke, 18 mm.; pulse, 100; respiration, 36.

At 4:06, an injection of 22 minims of whisky was administered to dogs 1, 2 and 3.

At 4:08, dog 1, blood-pressure, 118 mm.; stroke, 11 mm.; pulse, 156; respiration, 56. Dog 2, blood-pressure, 78 mm.; stroke, 10 mm.; pulse, 152; respiration, 52. Dog 3, blood-pressure, 58 mm.; stroke, 9 mm.; pulse, 100; respiration, 36.

At 4:19, dog 1, blood-pressure, 111 mm.; stroke, 8 mm.; pulse, 160; respiration, 56. Dog 2, blood-pressure, 88 mm.; stroke, 9 mm.; pulse, 156; respiration 44. Dog 3, blood-pressure, 55 mm.; stroke, 14 mm.; pulse, 100; respiration, 36.

At 4:20 an injection of 22 minims of whisky was given to dogs 1, 2 and 3.

At 4:22, dog 1, blood-pressure, 118 mm.; stroke, 10 mm.; pulse, 160; respiration, 72. Dog 2, blood-pressure, 84 mm.; stroke, 9 mm.; pulse, 148; respiration, 56. Dog 3, blood-pressure, 55 mm.; stroke, 12 mm.; pulse, 132; respiration, 40.

At 4:48-15, dog 1, blood-pressure, 114, mm.; stroke, 8 mm.; pulse, 156; respiration, 64. Dog 3, blood-pressure, 60 mm.; stroke, 12 mm.; pulse, 128; respiration, 40.

At 4.49-45, an injection of 22 minims of whisky was administered to dogs 1, 2 and 3.

At 4:50-45, dog 1, blood-pressure, 121 mm.; stroke, 8 mm.; pulse 172; respiration, 68. Dog 2, blood-pressure, 75 mm.; stroke, 7 mm.; pulse, 144; respiration, 52. Dog 3, blood-pressure, 60 mm.; stroke, 11 mm.; pulse, 120; respiration, 44.

At 4:52, the sciatics were stimulated. The results were as in the last observation.

At 5:03, dog 1, blood-pressure, 120 mm.; stroke, 9 mm.; pulse, 144; respiration, 68. Dog 2, blood-pressure, 75 mm.; stroke, 9 mm.; pulse, 144, respiration, 52. Dog 3, blood-pressure, 62 mm.; stroke, 11 mm.; pulse, 120; respiration, 44.

At 5:04, an injection of 22 minims of whisky was administered to dogs 1, 2 and 3.

At 5:07, dog 1, blood-pressure, 130 mm.; stroke, 11 mm.; pulse, 168; respiration, 48. Dog 2, blood-pressure, 74 mm.; stroke, 8 mm.; pulse, 148; respiration, 48. Dog 3, blood-pressure, 65 mm.; stroke, 10 mm.; pulse, 96; respiration, 36.

At 5:26-30, dog 1, blood-pressure, 120 mm.; stroke, 8 mm.; pulse, 160; respiration, 66. Dog 2, blood-pressure, 80 mm.; stroke, 10 mm.; pulse, 152; respiration, 56. Dog 3, blood-pressure, 65 mm.; stroke, 8 mm.; pulse, 100; respiration, 40.

At 5:27-30, an injection of 22 minims of whisky was administered to dogs 1, 2 and 3.

At 5:30, dog 1, blood-pressure, 123 mm.; stroke, 10 mm.; pulse, 153; respiration, 72. Dog 2, blood-pressure, 74 mm.; stroke, 10 mm.; pulse, 132; respiration, 56. Dog 3, blood-pressure, 70 mm.; stroke, 8 mm.; pulse, 88; respiration, 40.

At 5:31, electrical stimulation was applied to the sciatics. The usual effect was noted.

At 5:35, the animals were killed with intravenous injections of MgSO.

Experiment. Nitroglycerin.—Small mongrel pup; weight, three kilos. Morphine and ether anesthesia. At 12:05, blood-pressure, 120 mm.; pulse, 210; respiration, 60.

At 12:06-30, an intravenous injection of 10 minims of a one per cent. solution of nitroglycerin was made. At 12:07, blood-pressure, 60 mm.; pulse, 192; respiration, 48. At 12:10, blood-pressure, 110 mm.; pulse, 210; respiration, 48. At 12:15, blood-pressure, 100 mm.; pulse, 180; respiration, 36. The animal was then killed.

MEDICAL PROGRESS.

SURGERY.

Experimental Surgery on the Vasa Deferentia.—Animal experiments for the purpose of determining the permeability of the canal when total or partial resection of the epididymis had been done, and the vas sutured either to the testicle or the resected epididymis, have been made by W. Bogoljuboff (Archiv f. klin. Chir., Vol. 72, No. 3). He operated on various animals, horse, dogs, sheep and cats, and claims that, in several instances, the anastomosis formed between the vas and the epididymis permitted the passage of the spermatozoa. It seems that the most suitable locality for making the anastomosis is between the vas and the head or the upper half of the epididymis. In most cases an intermediate space is formed which includes at the ends the canals of both structures. The author suggests that the operation may be applied clinically in certain cases where inflammatory conditions of the epididymis have produced an azoospermia.

The After-effects of Head Injuries.—Mental disturbances which follow injuries to the head are by no means the only factors to be considered in these frequent traumata. There is a long list bearing upon the impairment of certain special intellectual faculties. T. Crisp English (Lancet, Feb. 27, 1904) states that traumatic amnesia of some kinds is very common, varies greatly in degree and may be temporary or permanent. Agraphia as a consequence of cerebral injuries may persist indefinitely. It occurred in an officer who had been shot through the head in South Africa, in which, fifteen months after the injury, he was apparently absolutely well, with the exception of a total inability to write. The musical faculty is sometimes lost while others are retained. Some patients who are unable to speak a word can sing it. The arithmetical faculties may be lost; it having been recorded in numerous instances that clerks apparently perfectly well, had, after cerebral injury, been unable to add up a single column of figures. In the diagnosis of these various conditions, malingering and exaggeration must always be remem-

bered. Hysteria, neurasthenia, syphilis and gout should be carefully excluded. The conclusions as to treatment are as follows: (1) In rather more than half of the cases cure may be brought about by medical measures; prolonged mental rest and the proper administration of mercury are the essential points. (2) In a few of the cases the symptoms are mainly due to chronic osteosclerosis and such cases may be almost certainly cured by trephining. (3) In the remainder of the cases the symptoms are more persistent and do not yield to general measures or to the removal of thickened bone only. The author believes that in such cases these symptoms are the reflex results of lesions or irritations of the dura mater; and if the injury has involved the vault of the skull cure can be effected promptly by excision of the thickened or adherent dura mater and removal of any other source of irritation which may be present.

Otto Schmidt's Treatment of Cancer.—Ours is not the only public infested by the octopus called "quack." John Shaw (Med. Press, March 16, 1904) states that while journeying in Switzerland, he took occasion to study, at one month's interval, the effect of this widely advertised treatment on some of his countrymen and women, who had been seduced into taking it. It is the same old story of injections, promised cures, sloughings, delays and ultimate recurrences. The author was unable to obtain any satisfaction from Dr. Schmidt, and when he remarked that a certain patient, who was about to be discharged "with the cancerous process arrested," be sent to Prof. Von Bergmann in order that his opinion as to the alleged arrest might be obtained, Schmidt replied: "Es hat keinen Zweck." In the opinion of the author, it is desirable that before any further exodus of English people takes place, to this sanitarium it should be further investigated.

Fecal Incontinence Treated by Injections of Paraffin.—Broadly speaking, these cases may be divided first, into those cases in which the sphincter ani still retains a small degree of power, and second, those in which it is absolutely paralyzed or is absent. For the latter class of cases, a number of plastic operations based upon the theory of muscle splitting, have been devised, the chief muscles concerned having been the levator ani and the gluteus maximus. A. H. Burgess (Lancet, March 12, 1904) reports two cases of absolute incontinence, one of which was associated with rectal prolapse in which he has obtained great benefit from the submucous injection of paraffin. The injections were made under anesthesia and were placed in several tiers, the upper one commencing as high as the operator could reach. The bunches of paraffin were arranged in threes, so that they may be conceived to have a somewhat similar action to the rectal valves. The melting point in each case was 111° F. In one case 52 c.cm. of paraffin were introduced. This is approximately equal to an ounce and a half. The other patient was a boy who had suffered from complete incontinence of feces from infancy. He had had various operations performed without any improvement being manifest. Two injections were made, the first comprising 6 c.cm. and the second 27 c.cm. There were thus 33 c.cm. or about an ounce injected in all. The dangers of embolism from paraffin injection are well known, but if the material undergoes organization, as it is said to do, this is a danger which in such desperate cases may well be discounted.

Perforation in Typhoid.—The results of intervention in typhoid perforation have as yet not been crowned with the success which was originally hoped for. H. C. Drury and William Taylor (Med. Press, Jan. 13, 1904) report, however, a most encouraging case. It was that of a boy, twenty-one years old, who was suffering from ambulatory typhoid. The second day after admission to the hospital he complained of severe pain. Four hours later his pulse had risen to 120; face was drawn and anxious, the abdomen full and distended. It was tender and tympanitic. Eight hours from perforation with a pulse at 150 and respiration at over 50, the abdomen was opened. The perforation was easily found about 20 inches from the cecum. The opening was closed, together with a second ulcer, which seemed about to perforate. Several pints of warm salt solution were left in the cavity. Time of operation, twenty-one minutes. The heart flickered along at the rate of 150 for two days and gradually got down on the fourth day to 100. Unfortunately there was a local infection in the wound. Twenty-eight days after operation he complained of pain in the abdomen. The symptom persisted and grew worse, the patient became very sick, the temperature was normal, the pulse rose to 116. There was obviously obstruction. An enema produced no effect. The intestines were found extensively matted together, angulation being the cause of the obstruction. Unfortunately the case succumbed from the shock of this secondary operation. Autopsy showed an interesting condition, namely, that there were numerous ulcers which would not have healed for four or five weeks from the termination of the fever.

Radical Cure of Femoral Hernia.—Bottini, Bassini, Kocher, Cushing and others have perfected technics from the treatment of this condition, which in most cases may be depended upon to give permanent relief. J. H. Nicoll (Med. Press, Jan. 6, 1904) describes his operation, which is devised particularly for very bad cases, as follows: (*a*) Obliteration of the sac; expose it, open it, remove its contents, separate it for one inch around the abdominal part of the ring; bisect it longitudinally; make an aperture in one-half near the neck; interlock the halves by putting one-half through the opening in the other; reduce the sac which lies thus bunched up within the abdomen. (*b*) Closure of the femoral ring. Carry a bone-deep incision from the femoral vein along the pubic ramus to the pubic spine. Detach the periosteum and retract it. Drill the bone near its upper edge in two places. By a method which is described in admirable detail these drill holes are utilized as points of attachment for the fascia. The method is in a measure similar to that of Roux who drives a U-shaped staple through the ligament in the bone.

Ambulatory Treatment of Fracture of the Lower Extremity.—A great many continental surgeons pride themselves on being able to have their patients walking within a few days after the occurrence of the fracture. T. H. Openshaw (Lancet, March 12, 1904) describes Hoeffteke's modified Hessing's splint, which he has used with great satisfaction in a large number of cases. So widely is this instrument utilized in Europe that the designer, who was originally a carpenter, now has an immense plant and is a very wealthy man. It is used for fractures of the lower extremity and disease of the elbow, hip or knee. The splint case consists of four minor cases united by steel bands. Heavy leather encircles the thigh from just above the patella to the level of the ischiatic tuberosity behind. This leather opens in front, to be laced up when fitted on. It is fenestrated and lined with flannel. Along each side are clamped firm, adjustable, steel supports, which serve to transmit the weight of the body from the leather casing to the ground. The weight is carried in two ways. First, as above, through the tuberosity, and second through the very accurate fitting of the casing to the thigh. By this double action, the approximated ends of both are not allowed to override. A steel sole

piece with a strong upright on each side is directly continuous with the lateral thigh pieces. This splint is made as follows: A plaster cast is taken of the extremity. This is removed by a split down the outer side, then horizontally across the front of the ankle-joint. This mold is then used to make an ordinary plaster cast of the extremity, and on this cast the leather and casings are built. Most patients can walk with this apparatus without the aid of a stick at the end of a week. The advantages of the splint are obvious, patients who otherwise are obliged to stay in bed being able to go to business at the end of a week or ten days.

Alterations of the Gastro-intestinal Canal in Pernicious Anemia.—Faber and Bloch reported in Gaz. degli Osped. (March 17, 1904): From an accurate study of the intestinal canal in three cases of pernicious anemia, new proof of the statements made in 1889 were found contradicting the view that those alterations described by Nothnagel and his school as intestinal atrophy should be considered post-mortem autodigestion. The authors injected formalin into the alimentary canal and peritoneum directly after death. The mucous membrane of the stomach and intestine was thus preserved. In each of the three cases was found a diffuse gastritis, in two cases the number of the glands was diminished. Some of the glands of the stomach showed a cystic dilatation, the rest nothing abnormal. The stroma was hyperplastic and irregularly infiltrated with round cells. Clinically achylia was found in all three cases. In the intestine no anatomical changes were found, and the minute glandular structure was absolutely normal. No atrophy was found. The authors believe that the gastritis had no etiological relation with the anemia, because cases of pernicious anemia had been observed without achylia, and innumerable cases of ordinary gastritis without anemia. Both the gastritis and the anemia may arise from the same toxic influence, and it is possible that the toxin originated in the intestine. This cannot be demonstrated anatomically.

New Treatment for Fracture of the Neck of the Femur.—The results which are obtained from the usual methods of treating this particular fracture are probably less satisfactory than those following fracture of any other bone in the body. One important reason for this is the mistaken idea which is very generally held by the medical profession that the fracture of the neck seldom occurs except in old people, and hence wrong methods of treatment are instituted from the beginning in young and vigorous individuals who are thus permanently condemned to more or less functional disability. Furthermore, in old people the results are at once recognized as being unsatisfactory and only partial resumption of the function of the joint is even hoped for. R. Whitman (Med. Rec., March 19, 1904) suggests a much more hopeful prognosis for the majority of cases when subjected to an early diagnosis and efficient treatment and points out the frequency with which this condition is met in young and middle aged people. The typical treatment for complete fracture of the neck is the long T-splint to which the body and limb are bandaged, supplemented by the traction force of a weight of from five to seven pounds attached to the foot to resist muscular spasm and to overcome eventually the shortening caused by the upward displacement. It is evident, however, that this method does not prevent more or less movement of the fragments and no attempt is made to secure an accurate apposition of them. In fact in most cases an early resumption of movement is advised in many instances to prevent the patient from becoming bedridden. An impacted or partial fracture is not generally made complete and reduced, although the patient must thus be condemned to partial disability because of direct interference with the function of the joint. Since the deformity which usually results is due to the overriding and adduction of the lower fragment it is urged that this may be most easily prevented by a gradual and forcible abduction of the limb until the trochanter presses upon the pelvis, and then using this as a fulcrum a further abduction will make the capsule tense and thus best direct the outer toward the inner fragment contained within the acetabulum and bring them into more or less accurate apposition. This having been done, a plaster jacket is applied from the mammary line of the chest down to the toes of the affected side, traction and abduction being maintained and care being taken that the jacket fits well around the hips. It is, of course, necessary to first apply cotton and bandages to protect the skin and preferably a jacket of seamless skirting may be used to cover the body and limb. In some cases it may not be necessary to carry the plaster cast below the knee or so high upon the chest. The long spica may be shortened at the end of four weeks, and probably removed at the end of eight. Massage and passive movements may then be used but the limb should not be allowed to support weight for at least four months. In any event, increased and especially persistent discomfort after functional use indicates that the joint is not equal to the work that is required of it and further rest should be demanded. This method should be used in old people as well as the young for the chances of complete recovery in these cases depends more upon complete immobilization and good apposition of the fragments, than upon the age of the patient. Furthermore, the patient may be moved and gotten up to walk with a short spica of the above description long before it would be justifiable with any other appliance, for the immobilization of the parts is more complete. The results from the above methods of treatment have been very successful and have been employed by the author during the past three years.

PHYSIOLOGY.

Effects of Sulphocyanides on Metabolism.—Even less than 0.25 gram of sulfocyanide will give a distinct reaction in the urine with chloride of iron, if given by mouth, according to A. Mayer (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 3 and 4). After three hours the reaction can no longer be obtained unless a second dose has been given. The total amount of sulphur excreted was high, but neither sulphuric acid nor ether-sulphuric acid was influenced. It seems that sulfocyanides share the properties of other cyanides in inhibiting to some extent the natural oxidation of proteids within the body. Observations on the acidity of urine, show that this is reduced while the amount of ammonia is increased. The excretion by way of the salivary glands is equally as slow as through the urine. Numerous blood-counts made before and after the administration of harmless doses gave no evidence of change.

Amount of Sulfocyanide Excreted in Health and Disease.—By means of a new, very delicate, quantitative method, A. Mayer (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 3 and 4) could prove that sulphocyanide is a constituent of every normal urine and that about 0.05 gm. are excreted in every liter. Smoking seems to increase the amount considerably, but probably only because so much more saliva is swallowed. High figures were obtained after exercise and low ones after excessive perspiration, but in no case examined was this substance absent altogether. In disease, the daily amount stands in relation to the amount of urine voided and all febrile conditions are accompanied by an increased discharge. In general, the author obtained the impression that the saliva is not the only source, but

that sulphocyanides are formed in other as yet unknown parts of the body.

Researches in the Pancreatic Juice.—The quantity of pancreatic juice daily secreted, according to K. Glaessner (Hoppe-Seyler's Zeitsch., Jan. 26, 1904), is about 500 to 800 c.cm. It contains no trypsin, but only a forerunner of the same, which is rendered active by means of the intestinal juice. The fat-splitting and diastatic ferments are strengthened by means of the bile and intestinal juice or only by the latter. The hydrolysis of starch proceeds only as far as maltose, the further splitting of the disaccharides being brought about by means of the intestinal juice. Disaccharides (milk and cane-sugar) are not influenced by the pancreatic secretion. The quantity of juice ferment and the degree of alkalinity are smallest during the condition of fasting, rise soon after a meal, reach their highest point four hours later, to sink eight hours after the beginning of digestion.

The Influence of Various Salts on Pancreatic Digestion.—The alkali salts of the halogens, according to H. R. Weis (Hoppe-Seyler's Zeitsch., Jan. 26, 1904) disturb tryptic digestion to a very small degree, sodium chloride most of all, potassium chloride less and this latter more than the corresponding iodine and bromine compounds of the same concentration. Sodium oxalate has a much more powerfully inhibitory effect than sodium chloride. The sulphates have a greater inhibitory action than the chlorides. Borax has no effect, and the acid sodium phosphate has a favorable action.

Remarks upon Temperature.—The general opinion has always been that temperature is one of the most invariable factors to be observed in the human body, but since the nursing of surgical cases, in particular fractures and other local injuries, has been brought to bear so fully upon numerous cases, it has been observed that under physiological conditions there may be an appreciable degree of variation. M. S. Pembrey (Brit. Med. Jour., Feb. 27, 1904) states that the Darwinian theory leads to the conclusion that the warm-blooded have been evolved from the cold-blooded animals. The temperature of newly born pups, kittens and rabbits falls when they are removed from the warm surroundings of their mother until it reaches but a few degrees above the surrounding air. This, however, is not true of newly born guinea-pigs who incidentally have their eyes open, are thickly coated with fur and are early able to take care of themselves. The young warm-blooded animals may therefore be divided into two classes, those which are blind and helpless and naked and those which are the opposite. These observations were made by Edwards in 1824, but it has only recently been shown that the difference lies in the development of the power of thermogenetic regulation. So far as infants go, Raudnitz has investigated with the view of determining in which class they belong. The conclusions of numerous observations show that the power of regulating temperature is incompletely developed in the newly born infant. The regulation of heat loss is imperfect as well as the regulation of heat production. Maternal instinct has evidently long since anticipated what science has but recently observed, and it is a corollary that the higher and finer the degree of maternal instinct, the less the power of the young to regulate their temperature. The range of temperature in the healthy adult should be determined by rectal temperature alone, the mouth being decidedly irregular. Healthy man shows a range of from 98.8° to 100° F. Certain individuals have been shown to be capable of maintaining a temperature of 101.3° F. without its causing distress. It is important to note that these physiological relations are prone to take place in domestic animals, a fact that should not be forgotten in the exhibition of tuberculin and other tests. Muscular work is considered by the author to be in a measure responsible for heat stroke. It is highly probable that time will show that numerous patients are now kept in bed to be enfeebled thereby simply because their normal temperature is above 98.6° F. The influence of changes in external temperature has probably been correctly interpreted, for it has been truly shown that the yearly average temperature of a man living in the Tropics and the arctic regions is the same. The anesthetized patient cannot regulate his temperature. The combustion of the body is reduced to one-half its normal value and the vital resistance concomitantly decreased. The limits of body temperature compatible with life apparently lie between 75.2° and 114.8° F.

Secretion and Blood-flow of Pancreas.—The fact that secretion continues for some time after complete cessation of the pancreatic circulation, leads O. May (Jour. of Physiol., Feb. 25, 1904) to conclude that there is no direct relationship between the rate of secretion of pancreatic juice and the extent of its blood-supply. By means of the plethysmographic method the author found a suitable means of recording the changes in the blood-supply of the pancreas. This organ is well supplied with vasoconstrictor nerves. The secretion resulting from the intravenous injection of secretin is accompanied by well-marked vasodilatation of the pancreas, which dilatation appears to be secondary to the secretion, probably a result of the action of some catabolites on the vessels.

Investigations on the Liver.—The observation of, diagnosis and treatment of diseases of the liver reveal the utter paucity of the knowledge of the normal and pathological functions of this organ. The researches of L. Brauer (Hoppe-Seyler's Zeitsch., Dec. 19, 1903) seek to broaden the horizon of the knowledge of this subject. It is noted that while normal human bile contains mucin or nucleo-albumin, it contains no coagulable proteid. Traces of the last are found as a cadaveric manifestation and in catarrh of the biliary passages. Larger quantities are present in hepatic congestion, typhoid and parenchymatous nephritis. It has also been discovered in fatty and cirrhotic liver, but not in amyloid or carcinoma. "Albuminocholia" connotes this condition. Normally in the intestine the bile is partly absorbed, nearly all of its water and a large part of its acids. The latter are carried again to the liver where they stimulate a further secretion of bile. For this reason the bile obtained by means of an artificial or natural biliary fistula is not quantitatively identical with that produced under the influence of the normal circulation of the biliary acids. Without the normal stimulus of the latter upon the hepatic function the quantity and quality of the bile are materially lessened. This peculiar circulation of the important constituents of the bile led the author to investigate whether drugs administered for their effect upon the liver undergo a similar circulation. This is found to be the case with methylene blue, which is interesting in this connection, inasmuch as it is one of those drugs that have been administered with the view of controlling infectious catarrhal processes in the biliary passages, particularly those that result in the formation of calculi. Indeed, it has been found that under the influence of methylene blue, cholecystitic manifestations recede and there is a corresponding diminution of coagulable proteid in the bile. The excretion of methylene blue in the bile exceeds the excretion of this substance in the urine during the first few hours after its administration. These facts are of extreme interest for the light which they throw upon the etiology of diffuse diseases of the liver. They tend to

support the hypothesis that hepatic cirrhosis, as for example, in chronic dyspepsia, may depend upon the absorption from the intestine of toxins, which undergoing an intermediate circulation like that of the biliary acids and methylene blue, act upon the liver more profoundly than upon any other organ such as the kidney, which, although it in the long run excretes these toxic products, at any rate does not suffer from the repeated circulation of these substances through its parenchyma. It is well known that methylene blue is excreted by the kidneys partly in the form of reduction products known as "leucobodies." This is also true of the methylene blue excreted in the bile. This fact is of importance from the standpoint of hepatic antisepsis, inasmuch as these leucobodies in themselves are non-toxic. Under normal conditions human and animal bile contain no sugar. During the first few days of pancreas-diabetes sugar appears in the bile. Naunyn found the condition of glycocholia in the diabetes produced by puncture of the floor of the fourth ventricle. The author found that ethyl- and particularly amyl-alcohol easily pass into the bile. Moreover, alcohol shows a greater preference for the bile than for the urine. These facts coincide with the clinical experience that chronic alcoholics suffer more frequently from hepatic than from renal diseases. The anatomic interpolation of the liver in the portal circulation would naturally expose this organ to the influence of toxic agents administered per os more than any other gland. The results of the author not only indicate the easy passage of alcohol through the liver, but also the fact of greater importance, namely, the irritation of the hepatic parenchyma resulting from this passage. Always after relatively large doses of alcohol taken on an empty stomach, coagulable albumin appears in the bile, more in the case of amyl- than in the case of methyl-alcohol. In this instance there is a more marked tendency to the appearance of albumin in the bile than in the urine. Cirrhosis of the liver, which is considered as a typical drunkard's disease, has never been experimentally produced. That it results from the irritation of the alcohol is indicated by the experiments of the author, for just as albuminuria indicates a damage to the parenchyma of the kidney, so albuminocholia indicates a lesion of the parenchyma of the liver. The frequent occurrence of acute hepatitis after the generous imbibition of alcohol is also easily explained by these experiments. Moreover, under the influence of alcoholic intoxication there appear in the bile isolated epithelial casts of the fine interlobular biliary passages, as well as a form of hyaline casts. In normal animals these are not found. The casts are evidence of an ascending catarrhal cholangitis, the result of an intoxication. The casts are produced either by a direct injury of the biliary passages by means of secretory phenomena in the latter, or by the stimulation of the interlobular bile ducts by the alcohol flowing by in the bile. Cylindroid casts have been found in the gall-bladder in cases of typhoid and cholera, as well as in hypertrophic cirrhosis and in the large clinical group of cases of icterus presenting toxic and infectious manifestations. Hanot's cirrhosis has been attributed to a catarrh of the bile ducts, and the known forms of icterus to an obstruction of the interlobular bile-ducts with liver cells, epithelia of the biliary passages and detritus.

NEUROLOGY AND PSYCHIATRY.

Surgical Treatment of Epilepsy.—The unsatisfactory results in the treatment of epilepsy by means of the bromides has led to various more or less hazardous surgical procedures with the aim that the irritative cause of the explosion might be removed. Some two hundred cases have been reported in which a bilateral excision of the superior and middle cervical sympathetic ganglia was done. S. D. Hopkins (N. Y. Med. Jour., March 5, 1904) reports five more cases, one of which was particularly severe but has, since the operation, remained free from convulsions for a period of over two years and hence is considered a cure. The other four cases have been greatly improved, one of them having been without an attack for the past six months. All of them had been previously treated with the bromides without benefit. The removal of the ganglia is followed by several notable disturbances. In three of the cases the pupils remained contracted and acted sluggishly to the light. In the other two cases, one pupil was dilated while the other was contracted. All cases showed a congestion of the conjunctivæ and face, ptosis, increased flow of nasal mucus and a decrease in the pulse and respiratory movements, a decrease in the former of five to thirty beats being noted when the ganglia were divided. The function of the cervical sympathetic is to control the muscular action of the cerebral blood vessels, to transmit impulses from the stomach, intestines and lungs, and to enervate the dilator muscles of the pupil. The most probable theory of epilepsy is that there is a circulatory disturbance in the brain, and since the cervical sympathetic ganglia contain the vasoconstrictor nerves, the excision of these structures will prevent spasms of the blood vessels. A permanent dilatation thus increases nutrition and assists the removal of toxic substances. The excision of these ganglia also prevents the transmission of impulses from the viscera and is, therefore, necessarily of value in reflex epilepsy.

Motor Symptoms of Mania and Melancholia.—Any theory of the origin of these conditions and of the origin of delusions arising in patients suffering from them is welcome. W. H. B. Stoddart (Lancet, March 5, 1904) states that he observed some years ago that melancholiacs suffer from paralysis and rigidity of the muscles of the spinal column and of the large proximal joints, the movements of the wrists and smaller joints being comparatively unimpaired. The attitude of the melancholiac is one of general flexion and adduction, the shoulders being raised owing to the rigid retraction of the upper part of the trapezius. In a severe case the patient cannot raise the elbows above the level of the shoulders, and in profound melancholiac stupor, he stands in the attitude of general flexion with adduction. If, however, there is associated some degree of restlessness, this naturally shows itself in those movements which are least paralyzed, viz., at the wrists, fingers, ankles and toes. For this reason, the melancholiac usually stands, rigidity of the hips rendering sitting uncomfortable. The movements of mania contrast very strikingly with those of melancholia. A maniac in a state of motor excitement moves, for the most part, from the large proximal joints. When a maniacal woman runs, there is an exaggerated movement at the hips, whereas in the running of a sane woman, there is almost none. When a maniac moves his arms, the greatest movement takes place at the shoulders, there being little or none at the wrists and fingers. The maniac shakes hands from the shoulder, the melancholiac from the wrist. In the maniac the attitude of prayer is with hands upraised, in the melancholiac the hands are clasped before the sternum. Experimental psychology has shown a most interesting relation of a normal individual to these phenomena. If such a person's arm is allowed to play upon an automatoscope, and the mind allowed to be absolutely indifferent, the instrument records a slight normal tremor. If now the patient be given an unpleasant stimulus such as the smell of asafetida, *adduction* of the arm is recorded. If, on the other hand, the stimulus is pleasant, viz., heliotrope, *abduction* of the arm is shown by the in-

strument. The author goes on to weave an interesting theory as to the origin of the delusions, which is based upon the belief that they take their rise directly from the disabilities produced by muscular spasms and paralysis. Thus the delusions of the melancholiac are to be traced from his general feeling of inactivity. The exaltation of the maniac arises in a corresponding way from the feeling of activity produced by the stimulation of his cortical neurons. He feels strong and capable of the most wonderful feats. This gives him the idea of power, and the delusion that he is the king or God.

A Salt Solution in Locomotor Ataxia.—The injection of a mixture of 250 c.c. $\frac{m}{8}$ sodium chloride, 125 c.c. $\frac{m}{8}$ sodium sulphate, 120 c.c. $\frac{m}{12}$ sodium citrate and 5 c.c. $\frac{m}{8}$ calcium chloride into the subcutaneous tissues of a man suffering from tabes, causes, according to S. A. Matthews and O. A. Brown (Am. Jour. Physiol., April 1, 1904), pains and other sensations similar to those experienced in the earlier stages of the disease. This occurs even though it has been years since such pains were first felt. The pains decrease successively after each injection, until about the fourth or fifth, after which they may not occur at all. The author cannot state whether such injections have any therapeutic value, though the effects of the latter are of physiological interest. It is possible that the remarkable localization reaction may be of diagnostic value. Injections into persons who did not have locomotor ataxia do not produce similar sensations.

Cerebrospinal Influenza.—Influenza is a chameleon-like clinical entity, says Weljam Owitsch (Med. Obosrenije, No. 22), which offers great difficulty to the clinical experimenter, and is with great difficulty distinguished from typhoid or malaria. Each epidemic shows great variation of the individual characteristics of the virus of influenza. The effect of the poisoning depends on the individuality of the patient. Every patient possesses a locus minoris resistentiæ, and, for example, in phthisical patients the lungs are especially liable to attack. In neurotic patients the cerebrospinal symptoms are easily developed. Delirium and alteration of consciousness are the results of a toxemia affecting the centers in the brain. A characteristic of influenza is a slowing of the pulse (toxic effect on the vagus), and slightly increased temperature. The purely nervous forms of influenza are not often mentioned in literature. Weljanowitsch records the history of a soldier in good condition, with a urethritis, who developed weakness, vertigo, loss of appetite, and suddenly had convulsions, with sudden loss of consciousness. Later, delirium developed. In this case a central irritation from the urethritis, or an embolism of the cerebral arteries, a uremia, or an intoxication following an infectious disease. The author diagnosed the case as influenza. Weljanowitsch came to the conclusion that the cerebral symptoms and cardiac symptoms are frequent in influenza. He advises digitalis, caffeine, strychnine or strophanthus as curative agents.

Cardiac Paralysis in Toxemia.—Beriberi has, like diphtheria, a special influence of a degenerative nature on the cardiac muscle, according to Stanley (Gazz. degli Osped., March 5, 1904), and may produce cardiac paralysis. Such states of toxemia act in the same manner as poisoning by arsenic, alcohol, or by typhoid fever, rheumatism or influenza, all of which may produce a neuritis. The degeneration of the myocardium in beriberi or diphtheria is not due to a neuritis of the vagus, but is due directly to the influence of the toxin on the cardiac muscle. The cardiac paralysis never appears suddenly as a fully developed lesion, but is developed gradually, following cardiac weakness, increasing gradually in consequence of a degeneration of the myocardium. The fact that in beriberi cardiac paralysis appears with the same frequency as in diphtheria ought to make the prognosis of both diseases serious. Stanley, in the British Medical Journal, reports that in 500 cases of diphtheria observed by him, 30 died as a result of cardiac paralysis; 446 cases showed a change of the pulse. Of 341 cases of beriberi, 31 died of cardiac paralysis, 254 showed a diminution in the tension of the pulse, from which one may conclude a degenerative change in the myocardium.

The Source of Tonic and Clonic Epileptiform Convulsions.—According to different experimenters the convulsion center is spinomedullary, medullary, basilocortical or cortical, and insufficient distinction has been made between tonic and clonic spasm. So Nino Samaja (Revue Méd. de la Suisse Romande, March 20, 1904) instituted an extensive series of experiments on green frogs, rabbits, and new-born and adult guinea-pigs, cats and dogs. In each case the intact and healthy animal was subjected to the alternating street current for one second, and again after various curettings or sections of the central nervous system. The electrodes were placed in the different apertures or regions of the body according to circumstances, as, head, mouth, anus, etc. The author reaches conclusions as follows, with the understanding that the word "center" is used to designate that part of the cerebrospinal axis, whose stimulation excites tonic or clonic contractions: (1) The cortical motor area is the exclusive center in the adult dog and cat; the rest of the cerebrospinal axis gives only tonic convulsions. In the frog, the new-born dog and cat, the rabbit and the guinea-pig, the motor cortex, is not the seat of a convulsive center. (2) In the guinea-pig and the rabbit the medulla or the cerebral isthmus are the sources of clonic convulsions; in the guinea-pig and the frog the bulb isolated from the isthmus. (3) In all the mammals the spinal cord is the exclusive center for tonic contractions; it never gives rise to clonic spasm. In the frog, however, the cord is a clonic center. Thus, we find that the clonic convulsive center rises progressively from the cord to the cerebral cortex with the rise from the lower to the higher animals. It is situated in spinal cord and medulla in the green frog, in medulla in the guinea-pig, at the base of the brain in the rabbit, and in adult cats and dogs it is in the cerebral cortex. In man the seat of tonic convulsions is exclusively basilar, while that of clonic convulsions is cortical, and even at birth the motor cortical area is excitable. The type of clonic convulsions in man is partial Jacksonian epilepsy.

Hysterical Skin Symptoms and Eruptions.—The importance of recognizing these peculiar and interesting conditions cannot be overestimated. Thomas D. Savill (Lancet, Jan. 30, 1904) has met with seven different kinds of hysterical skin symptoms: (1) Attacks of generalized pallor of the surface; (2) attacks of flushing; (3) fugitive localized patches of congestion suddenly appearing and disappearing; (4) dermatographia; (5) acroparesthesia and erythromelalgia; (6) urticarial and other hemorrhagic exudations; (7) localized ischemia. The first three are quite peculiar to the emotional vasomotor neurosis which we call hysteria. The remaining four are more frequently met with in so-called hysterical subjects than in others. The author cites a large number of cases which had come under his observation, presenting the greatest variety imaginable of apparently inexplicable symptoms. It is true today, he says, as it was in 1682, when Sydenham wrote: "Whatever part of the body it (hysteria) attacks, it will create the proper symptom of that part. Few of the maladies of miserable mortality are not imitated by it."

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THE NEW BELLEVUE.

In connection with the presentation of plans for the new Bellevue Hospital, we give this week a short sketch of the history of old Bellevue. It may well be called old Bellevue, since the main building with its wings dates practically entirely from the beginning of the nineteenth century, having been finished in the second decade. The never-ending wonder is that so much reasonably good work has been accomplished at Bellevue in recent years, notwithstanding all the drawbacks presented by the time-worn old structure and the amount of infectious material of various kinds that it has necessarily gathered, some of which has so soaked in that it will be impossible ever to remedy the evils it is sure to produce. In this age of hospital progress Bellevue has been a crying shame for the city of New York for nearly a quarter of a century, and no American medical man has ever thought of bringing a foreign member of the medical profession to visit it without profuse apologies for the conditions there.

Its existence in its present shape is all the more to be deprecated, since the advance in the building and equipment of hospitals throughout Europe, which is popularly supposed to be so effete and backward, has been so striking in recent years. One of the most interesting features of Moscow, and one that surely aroused the admiration and the envy of the members of the American medical profession who visited that city on the occasion of the International Medical Congress some six years ago, was undoubtedly its magnificent set of hospitals. Out in the university quarter, in what is known as the "Fields of the Virgins," because it formerly belonged to a Russian religious order of women, there are a number of handsome buildings, each housing a separate department of medical or surgical practice. Gynecology and obstetrics have their building, medicine and surgery each a building, nervous diseases a special building, ophthalmology a building. All of them are comparatively new, all built within the last fifteen years, handsomely fitted up, thoroughly modern in their appointments and all of them are fittingly maintained. Yet this is the land where the poor are supposed to be least the subject of consideration, where the Russian peasant, if we would believe ordinary tradition, is still scarcely better than a slave and where modern progress has had least effect upon the life of the people.

Republics are said to be ungrateful, which may be true, for one thing is sure that the only city in Europe which has old hospitals to compare at all with Bellevue is Paris, though it must be recalled that the French capital has also some new handsome city hospitals. Those who have visited Rome in late years will remember the magnificent new hospital only recently completed, situated not far from the railroad depot in one of the most salubrious parts of the city. In Vienna we are prone to think of the General Hospital as typical of the city, but it must not be forgotten that while the old Krankenhaus has been left almost in its original condition, there are at least three magnificent new hospitals in Vienna that will compare favorably with such institutions anywhere in the world. As for Berlin, under the leadership of Virchow, who considered that he could do nothing that would be more worthy of his fame, of his great scientific knowledge and of the interest he had taken in the poor, since the days when, as the result of his investigation into the famine conditions in Silesia, he became a Socialist and suffered for his views, the capital of Germany has secured for itself the finest set of hospitals in the world. Some ten years ago a resolution was passed appropriating during the course of the following fifteen years, about five million dollars to be spent in the erection of suitable hospitals for the city's sick poor. As the

result of that there have come the model hospitals of the world in many respects, and the great German people have shown that their practical genius is ready to apply itself not only to the problems of industrial development but also of care for their ailing poor.

In a word, New York, the metropolis of the great Western Republic, has in the matter of public hospitals, stayed far behind all the rest of the world. We have, in private hospitals, some that we may well be proud of and in which indeed foreign medical, and especially surgical, visitors find many suggestions for their work at home. Why the great city of New York itself should be behind private charitable corporations in this matter of appropriate provision for its sick poor, must remain a mystery. It is to be hoped that now at last the disgrace is to be wiped out and New York is to show that she is ready to do what is after all only her plain duty in the matter of taking care of the poor who have no other recourse except public charity.

At the present time the conditions for the development of a new Bellevue are more favorable, we venture to say, than they have ever been before. Under the management of the Board of Trustees, as constituted by the amendment of the Greater City charter, which became effective in 1901, Bellevue and the associated city hospitals have been so well conducted, considering the many handicaps under which they labor, as to be a source of admiration and encouragement for all who are interested in the care of the ailing poor. The energetic enthusiasm of Dr. Brannan, the president of the Board of Trustees, has shown itself especially capable of arousing the cooperation of all those connected with the city hospital work. It was to be expected that Dr. Brannan would evolve some such worthy plan for the renewal of Bellevue as is now proposed. It will certainly be too bad if New York City should refuse to accept the opportunity to do itself justice that is thus provided for it.

When millions of money are being spent on libraries, museums and various other public buildings, it would be discouraging to think that only the sick poor, those who can help themselves least, are to remain the subject of the unfortunate conditions that have existed in the past and still remain. Medical men have laid down their lives and are laying down their lives even in our own time, in the care of the city's poor. Present conditions increase their dangers. This is unworthy of what we hope is to be the greatest city of the twentieth century and the beginning of the correction of this state of affairs should come at once. Let us have a fitting replacement of Bellevue, according to the plans of the present Board of Trustees and then New York will live up to her past and nobly redeem her fair fame for the care of the poor.

SERUM TREATMENT OF TUBERCULOSIS.

As is well known, the treatment of tuberculosis in the human being by active immunization with the intracellular toxins of the tubercle bacillus, obtained from human tuberculous material, has not yielded very encouraging results. Attempts have accordingly been made to reach the desired end in other ways.

Especially noteworthy in this respect are the experiments of Maragliano, who apparently succeeded in obtaining a tuberculo-antitoxin in a manner quite analogous to the production of diphtheria antitoxin, viz., by immunizing animals with aqueous extracts of tubercle bacilli, which had been prepared at different temperatures. To judge from the available data, however, the resulting product is not sufficiently active as to warrant its more extended application. Marmorek's experiments in the same direction, in which the bacilli were grown on leucolytic sera with the idea of stimulating their production of toxins have similarly not led to a satisfactory issue.

More encouraging are the results which have been obtained by active immunization with tubercle bacilli of diminished virulence, in other words, by vaccination. Koch and Schütz, it will be recalled, have claimed that the bovine tubercle bacilli are not identical with the type found in man, and that it is not possible to produce tuberculosis in cattle by the injection of the human variety. This has proven erroneous, however, and it is now well established that heterologous infection is after all possible. The two types only differ in their degree of virulence, in so far as each has lost its infectiousness to a certain extent for the heterologous host. With this basis given it appeared quite likely that it would be possible to actively immunize cattle against tuberculosis by means of human tubercle bacilli. Extensive investigations in this direction by von Behring have fully borne out the correctness of this surmise, for he succeeded in almost completely protecting animals in this manner against subsequent infection with virulent bovine bacilli. As Ehrlich and Brieger had shown in corresponding experiments that tetano-antitoxin appears in the milk,

it seemed quite logical to infer that it would be possible to produce a passive immunity against human tuberculosis by feeding infants with milk from cows that had previously been actively immunized in the manner indicated. It appears, however, that a prophylactic treatment of this character is not possible, as the serum of the immunized cattle does not contain any specific antitoxic or bactericidal antibodies, which could pass into the milk. While a material advance in this direction is accordingly not to be anticipated, the question naturally suggests itself whether it would not be possible to protect the human being by prophylactic injections with bovine tubercle bacilli. The possibility certainly is there, but under existing conditions it scarcely seems justifiable to make the necessary experiments. While this line of advance is thus closed there are still other paths along which the problem can be attacked.

Especially interesting in this connection are the experiments of Möller, who found that it is possible to accustom tubercle bacilli to a lower temperature than that of the human body. By experimental production of tuberculosis in blindworms he thus obtained a culture which only grew between 20° and 25° C. and died at a higher temperature. This growth proved entirely avirulent for warm-blooded animals, but was capable of producing prophylactic immunity against subsequent infection with virulent tubercle bacilli, as Möller proved in his own person. A curative effect upon animals, however, which had previously been infected could not be demonstrated.

A further advance has recently been reported by Pröscher from Pappenheim's laboratory. He suggests the necessity of simultaneous active and passive immunization of the already infected organism with antitoxin serum and toxin (antituberculin and tuberculin). The object of the antitoxin treatment is the neutralization of the tuberculotoxin, bearing in mind that an immunizing effect is obtained nevertheless even though the toxin solution has been completely neutralized by antitoxin.

Pröscher's procedure is the following: Starting with blindworm tuberculotoxin, which is isolated according to a special method, he produces an antitoxin serum of high potency by active immunization of appropriate animals. Guinea-pigs, which have previously been inoculated with human tubercle bacilli are injected subcutaneously with the resulting serum, and at the same time intravenously with the blindworm tuberculotoxin. This is then repeated with increasing doses according to the condition of the animal, either daily or every other day. Pröscher regards his results as quite encouraging and believes that he will shortly be in a position to obtain an antiserum which will meet all the demands that can be made of such a product in the attempt to successfully combat human tuberculosis. Further details of the experiments which are now in progress in Pappenheim's laboratory will be anticipated with much interest.

A NEW OUTLOOK IN THERAPEUTICS.

The recognition of the protozoan genus, *Trypanosoma,* as the chief etiological factor in the production of several tropical diseases, including the affection commonly known as "sleeping sickness," lends general interest to the methods proposed for attacking these parasites.

At the recent meeting of the American Association of Pathologists and Bacteriologists, Prof. Ehrlich, of Frankfort, reported the results of his experiments with a compound which possessed specific action upon one of the members of this group. A more complete account of his labors in this field, which were carried on in collaboration with Shiga, has been recently published (*Berliner klinische Wochenschrift,* 1904, Nos. 14 and 15), from which a number of suggestions may be gathered.

Although it seems reasonable to make use of the immunizing agency of specific antitoxins, the success of certain pharmacological products, such as quinine in malaria, lends support to the suggestion that chemical agencies may be made equally efficient. Their production and application is usually more simple than those derived from bacterial sources, especially when the higher protozoan organisms are under consideration. Laveran and Mesnil have had more or less success in their experiments with arsenate of soda in certain tropical animal diseases caused by the *Trypanosomata,* the unfavorable results being due to the chronic arsenical poisoning which appeared.

Ehrlich and Shiga made use of stains derived from the benzo-purpurin series and succeeded with a combination which they have called "trypanroth" (trypanred). They found that by the injection of a one per cent. solution of this substance in mice, a diffuse coloring of the skin and internal organs took place which lasted from six to ten weeks. They were next able to prove that mice injected with the coloring matter and blood

containing the trypanosomes, did not become diseased.

Similarly favorable results were secured when the solution was injected three days after the infection had taken place and the animal's blood was laden with the parasites. Recurrences were noted but they did not occur until after a considerable period (sixty-five days). An interesting fact is that the same good effects were noted when the substance was given by mouth. Mice that were fed with the drug for some days were able to stave off the infection entirely or were but slightly affected. The question as to whether the same good effects are seen in other animal species, has not been fully answered by the experiments thus far undertaken.

The authors believe, however, that closely related chemical products will be found to overcome the somewhat more unfavorable results seen in the other animal species experimented upon. It is of importance to know by what means these stains accomplish their purpose. Ordinary germicidal properties cannot be assigned to them as it was found that the trypanosomes were only destroyed within the animal body under conditions which could not be reproduced outside of the latter.

Further experiments also, showed that the protection called forth by the presence of the drug in the body only lasted a few days, but it was also demonstrated that a certain degree of immunity was conferred in those animals which had been infected and subsequently cured. The immunity, however, was limited, as shown in those cases where recurrences took place in sixty-five days.

Aside from the possibilities of their practical application, these observations are of interest in other ways. They apparently throw some light on the question of the manner of the recurrences in other diseases, such as malaria and syphilis. For these diseases it may also be assumed that the appearance of a recurrence may be ascribed to a transitory and more or less rapidly declining immunity and the effectiveness of a certain number of residual germs. It ought not to be a difficult matter to prove this experimentally in the case of malaria, by attempting to reinfect the individual after a cure had been accomplished by means of quinine. The time which elapsed before reinfection took place would then correspond to the immunity conferred by the quinine.

Another important result gained by these observations is, that they point to some bond of connection between immunity and cure produced by pharmacotherapeutic agencies. For it was shown that the trypanred which is analogous to other better known drugs, gave rise to conditions which led to an active immunity. Immunity secured in this way may possibly be more effective than that produced by specific sera, for during the activity of the latter, part of the receptor apparatus of the parasite is taken up which is consequently rendered inactive in so far as the actual production of antibodies is concerned. The possibilities offered by this new field of research are of far-reaching interest and importance.

ECHOES AND NEWS.

NEW YORK.

Measles Prevalent.—Measles is spreading at an alarming rate, according to Health Department figures, and its prevalence is declared to be greater than was ever known before. In many cases, too, it is followed by bronchopneumonia. Last week's report showed 1,630 cases in the five boroughs, with 37 deaths from measles and 135 from bronchopneumonia. Since Jan. 30, when there were 814 cases, the increase has been steady.

New York School of Clinical Medicine.—At the meeting of the Medical Board of the New York School of Clinical Medicine held April 9, Dr. J. L. Adams was elected Secretary of the school and professorial and other distinctions were conferred upon the following in the departments specified: Mental Diseases: Prof. E. C. Dent, Superintendent, Manhattan State Hospital, West, Ward's Island. Internal Medicine: Prof. Wm. Brewster Clark, M.D.; Gastro-intestinal Diseases: Prof. Robert Coleman Kemp, M.D., Associate Prof. Graham Rogers, M.D.; Hydrotherapeutics: Prof. Alfred W. Gardner, M.D.; Ophthalmology and Otology: Prof. Geo. Ash Taylor, M.D.; Clinical Instructor and Assistant, Wm. E. West, M.D.; Genito-urinary Diseases: Chief of Clinic and Associate, Prof. C. Stern, M.D.; Dermatology: Chief of Clinic and Instructor, L. D. Weiss, M.D.

State Civil Service Examinations.—The State Civil Service Commission announces general examinations on May 21 for the following positions: Apothecaries in State hospitals and institutions; resident physician and superintendent of nurses at the State Hospital for Tuberculosis; physicians in State hospitals and institutions of both regular and homeopathic schools. Address Chief Examiner at Albany.

Gift to Post-Graduate Hospital.—New York Lodge of the Benevolent and Protective Order of Elks held, on May 5, a ladies' social session in their Lodge rooms at Elks' Hall, Fifty-eighth Street and Eighth Avenue, and dedicated two beds which are to be endowed in the Post-Graduate Hospital. The contract was signed, and there were appropriate ceremonies. Mr. Champe M. Andrews made an address on behalf of the Lodge; Dr. D. B. St. John Roosa spoke on behalf of the Post-Graduate Hospital, and John J. Delany, corporation counsel, spoke of the charities of the city.

New Fordham Hospital.—Plans for the group of new Fordham Hospital buildings to be erected by the city at Crotona Avenue and the Southern Boulevard were filed yesterday at the Building Department. The structures will include the main hospital building, five

stories in height and standing on a plot 305 by 43 feet; a four-story power house, which will also contain a laundry and servants' quarters; a two-story brick stable and morgue, and a five-story nurses' home. The total estimated cost of these buildings is $560,315, of which $339,000 will be spent for the hospital itself, $129,000 for the power house, $52,315 for the stable and morgue, and $40,000 for the nurses' quarters. The plans were prepared by Architect Raymond F. Almirall.

Appeal for a Woman's Hospital.—An appeal for funds has been sent out by an organization concerned in the establishment of a hospital for women, for the purpose of affording relief to incurable cancer patients and for the treatment, study, and prevention of cancer. The hospital will be located in this city, and will be known as the Fairhaven Sanitarium. In the circulars issued by the organization the Commissioners of the State Board of Charities are said to have declared themselves satisfied with the necessity of such an institution as the one contemplated, as there is only one hospital in this city—the Montefiore Hospital—which admits incurable cancer patients. Before the Board of Managers can begin making any arrangements to incorporate and open the new hospital, however, $10,000 must be in hand. The dues have been fixed at $10 for annual members, $100 for life members, and $1,000 for patrons. Contributions for any amount will be received by Henry R. Wilson, President of the Lincoln Trust Company.

New Professorship of Pediatrics in Columbia.—Two gifts to Columbia University were announced by President Butler at the meeting of the Trustees Monday afternoon. The first was $60,000 from Horace W. Carpentier of the class of 1848 for the support of a chair in the Medical School in memory of his brother, the late Dr. Ruben S. Carpentier. The trustees voted to apply the income of this fund to the Chair of Pediatrics (diseases of children), and in recognition of the gift they named the chair, the incumbent of which is Dr. L. Emmett Holt, the Carpentier Professorship of Pediatrics. Dr. James R. Hayden was appointed Clinical Professor of Genito-urinary Diseases, in succession to Dr. Robert W. Taylor, who handed in his resignation to take effect on June 30. Dr. Arnold H. Knapp was appointed Clinical Professor of Ophthalmology.

Manhattan Dermatological Society.—Regular monthly meeting held Friday evening, April 1, 1904, at the residence of Dr. G. W. Crary, with Dr. Oberndorfer presiding.

The following cases were shown: Dr. Edw. Pisko presents five cases. (1) Lichen planus circinatus; the lesions in a girl of twelve years were best seen on arm and upper thigh; other typical papules were observed on the chest, abdomen and limbs, and a few on the face; the question of differentiating ringworm was decided by negative microscopic findings. Scratch marks on the thighs show the development of lichen papules. Dr. Oberndorfer saw this type on the penis in a general lichen of the body. Drs. Gottheil and Crary could not explain the evolution of circinate lesions except by coalescence of groups of papules; the healing center was rare. (2) A young man with characteristic syphilitic mouth lesions and a single circinate lesion on skin near inner canthus of left eye. The lesions in general outline and aspects resembled ringworm, but microscope decided negatively. Drs. Abrahams and Gottheil said the throat lesions and the negative microscopic findings helped to make a diagnosis of syphilis; the circinate form was rare but often met with in negroes. Dr. Oberndorfer stated that circinate lesions in early syphilis were not uncommon; the continuous margin of distinctly raised papules and their pearly appearance suggested lues. (3) A case of erythema multiforme; the lesions were by no means typical; in fact, the skin showed urticarial lesions; Dr. Pisko stated that the eruption had changed considerably within the past few days. (4) A middle-aged man with a lupus erythematosus of the nose and cheek, illustrating the beneficial effects of local applications of trichlor. acetic acid; a single application to a given area was sufficient; it must be gently applied and not rubbed in, otherwise deep ulceration may result; a small patch was covered at a time; usually 6, 8, or 10 such areas were treated, thus covering the entire patch. He treated eight cases within the past two months and recommended the remedy most highly. (5) A young man showing lichenoid lesions on right half of chest and abdomen and papules on neck; patient stated he used some strong liniment to relieve severe itching of the body; hence the latter lesions were considered traumatic while the papules on neck were regarded as most likely a true lichen planus.

Dr. L. Weiss presented a girl of fifteen years, showing innumerable small punctate pustules on forehead, and large acneform papules on face, with marked oily skin. The forehead also showed a high degree of dermatitis; the latter not artificial. Treatment consisted of soap lotions, peeling pastes, expression of comedones, and curette for large papules. Internally, iron, arsenic and strychnine. Dr. Weiss applied the term, follicular acne to the condition; Dr. Sobel called it acne, although the forehead was unusual; Drs. Moses and Gottheil suggested a mild form of treatment, believing better results would be obtained than by using strong peeling lotions and salves. Dr. Pisko called it acnitis. Dr. Bleiman makes a distinction between this case and one of simple acne; although the process was practically the same in both; the clinical picture was wholly different; he agrees with Drs. Moses and Gottheil in recommending mild treatment; since using the latter method the condition only began to improve. Dr. Crary would apply the term folliculitis to involvement of hair follicles and not to sebaceous follicles. Dr. Geyser stated X-ray treatment was almost a specific in these cases.

Dr. Gottheil presented the following cases: (1) A male with a lesion resembling a dermatitis confined to left index finger; the condition began as small flat pustules about one month ago; these ruptured, leaving a red, dry excoriated surface; neither the flexor surfaces nor the folds of adjacent skin are involved; this fact would tend to exclude it from the eczema class; Dr. Gottheil termed it impetigo circinatus chronicus. Dr. Abrahams said its localization, well-defined margins, slow progression and general aspects favored diagnosis of eczema parasitica. Drs. Crary and Pisko recognized a resemblance to dermatitis repens. Drs. Pisko and Bleiman spoke favorably of the use of 20 per cent. nitrate silver solutions locally applied. Dr. Cocks agrees with Dr. Abrahams in calling it parasitic eczema. Dr. Ochs saw good results from the use of sol. of kali permang. (2) A case of pigmented warts on the penis of three years' duration. (3) A case for diagnosis: A middle-aged woman shows large crescentic erythematous patches with raised margins, slightly scaling, and clear, slightly pigmented centers on both lower limbs; of many months' duration and slow progression; no mycelia found, and KI produced no result. Dr. Weiss entertained a possible diagnosis of erythematous lupus, and the suggestion was well taken by the members. Dr. Moses suggested erythrasms in an unusual location; he will examine scales for the fungus and report result at next meeting.

Dr. Crary showed a young woman with an enlarge-

ment of the sternal end of the left clavicle; present about one year, is getting slightly larger and is somewhat painful and worse at night. Patient gives only an incomplete rheumatic history. Dr. Gottheil said periostitis and thickening in this location was very suspicious of syphilis. Dr. Abrahams likewise called it syphilis. Dr. Moses advocated injection method, as bone lesions responded very slowly to internal medication.

Dr. Ochs presented a male, showing a suspicious sore on penis; of two weeks' duration and slightly indurated; no adenitis, no skin lesions; but throat shows a pharyngitis. Dr. Gottheil termed it a parchment chancre; Drs. Weiss and Abrahams would defer any opinion until two weeks had passed; they would prefer to await further developments.

Dr. Ochs also showed his case of onychorrhexis; he could not furnish any additional information as to its etiology but could report decided improvement in the condition since last presented. The nails seemed to respond to carbolic acid treatment. The patient's nails show decided improvement.

Dr. Oberndorfer presented a male with squamous lesions on both elbows, resembling psoriatic patches; patient had a similar outbreak ten years ago which responded to treatment. Presented as a case of chronic squamous eczema, resembling psoriasis.

Hospital Appointments.—Up to May 1, 98 men from the graduating class at the College of Physicians and Surgeons have secured interneships, graduate students have taken four places, and 11 have been made alternates, making a total of 113. In addition to the two appointments at the Almshouse and Workhouse hospitals, published in the Medical News of last week, two other appointments have been made, viz., Wm. Pincus and J. D. Malcolm. The following is the list for the past week: Passaic General Hospital, J. A. Wheeler, W. J. Duckett. St. Catharine's (Brooklyn) Hospital, E. O. J. Eytinge. Columbus Hospital, A. J. Ghiglione. Moses Taylor Hospital (Scranton, Pa.), H. A. Noble.

PHILADELPHIA.

Address by Dr. Sherrington.—Under the auspices of the medical faculty of the University of Pennsylvania, Professor Charles S. Sherrington, of the University of Liverpool, England, delivered an address in the Medical Hall, Thursday, May 5. The subject considered by Dr. Sherrington was "Cerebral Localization."

Graduate Nurses' Association.—The Graduate Nurses' Association of Pennsylvania met at Wilkesbarre April 20, the attendance being 100. The purpose of the meeting was to frame legislation compelling the registration of all graduate nurses in order to protect the public against impostors. Committees were appointed to urge the matter at the coming session of the legislature.

Meningitis at League Island.—Five cases of cerebrospinal meningitis and one death recently occurred at the League Island Navy Yard and Surgeon General Rixey hastened from Washington to outline plans for controlling the disease. Strict quarantine has been instituted and all the men quartered in tents. The authorities are confident that an epidemic similar to that of last year when 35 cases occurred will be prevented. The present outbreak is believed to be due to importation of the disease by a detachment of marines that recently returned from Panama.

Pasteur Treatment at Home.—The Pasteur treatment for rabies has recently been employed for the first time in this city by Dr. W. L. Forrester. The patient is a boy of four years who was bitten by a dog that post-mortem examination showed to be suffering from rabies. The boy was taken to New York where treatment was begun. He was then brought home and the necessary serum sent on each day and injected by the physician. No symptoms of the disease have developed and the danger limit has been passed for some days.

Phipps Institute.—Dr. Leonard Pearson, State veterinarian of Pennsylvania, has been appointed a member of the staff of this Institute and will accompany Dr. Ravenel on his European tour this summer. They will visit Italy, Holland, France, Sweden, Germany and England, studying the methods of those who have been experimenting with the inoculation and vaccination of both animals and human beings. The data thus gained will be given out by the Institute to the medical profession.

New Seaside Hospital.—The Jewish Maternity Association has purchased a property known as Leith Villa at Ventnor, N. J., which they will equip as a first-class seaside hospital. It will be placed in use during the coming summer in place of the one formerly conducted at Atlantic City. During last summer 326 patients were treated at the home, at an expense of $3,800.

To Disinfect Empty Houses.—A new step in the prevention of tuberculosis has been taken by the Department of Health. This is the disinfection of all empty houses on request of prospective tenants. The only requirement will be that the tenant guarantee thoroughly to clean the building before moving in.

Nurses Receive Diplomas.—Fifteen young women received diplomas at the commencement of the Polyclinic Hospital Training School for Nurses on April 29. Miss Maud Banfield, Superintendent of the hospital, spoke on "State Registration of Nurses." She urges this measure for the following reasons: The protection of the public, the protection of the nurses, and the improvement of educational standards among nurses. The principal objection comes from so-called schools that profess to turn out nurses after a ten weeks' course of lectures in a commercial building or after a course by mail.

Tuberculosis at the Zoo.—The Zoological Society of Philadelphia is to make experiments looking toward the prevention of tuberculosis in animals, this disease being one of the most frequent causes of death. An unused house in the garden is to be converted into a hospital where all new specimens will be received and examined and efforts made to produce immunity to the disease in question.

Tuberculosis Pavilions to Be Opened.—The six pavilions for the treatment of tuberculous patients at the Philadelphia Hospital are to be opened in the near future. They are situated in the extreme northwest corner of the grounds on an elevated site. The pavilions are 27 by 36 feet in size and so arranged that the entire four sides can be thrown open if so desired. Each will contain fourteen beds. The entire structure and the furniture is of iron or glass and the floor of artificial stone, thus allowing of the most thorough antiseptic cleansing of the surroundings of the patients.

Special Clinics for American Medical Association.—The medical schools and hospitals of Philadelphia have arranged for a special series of clinics and laboratory demonstrations as a compliment to the visiting members of the American Medical Association on their way to and from the June meeting in Atlantic City. The clinics will be held during the week preceding and the one following the session at At-

lantic City. The institutions contributing to this series are the University of Pennsylvania, Jefferson, Medico-Chirurgical, Polyclinic, Philadelphia, German, and Pennsylvania hospitals. Lunch to all members will be served each day in the University Hospital. Dr. John B. Roberts, of 313 South Seventeenth Street, will entertain at luncheon on Friday, June 3, at 2 P.M., members of the American Medical Association and of the American Academy of Medicine. The chairman of the committee on clinics is Dr. De Forest Willard, 1818 Chestnut Street.

Wills Hospital.—A meeting of the Wills Hospital Ophthalmic Society will be held Monday, May 9, 1904 at 8.15 P.M. The main subject chosen for discussion is Affections of the Lacrimal Apparatus. Introductory remarks: Etiology and Symptoms, by Samuel D. Risley, M.D.; Bacteriology and Microscopic Study, by Harold G. Goldberg, M.D.; Complications and Sequelæ, by S. Lewis Ziegler, M.D.; Treatment, by Wm. Campbell Posey, M.D. General Discussion by Drs. George C. Harlan, Conrad Berens, Frank Fisher, W. W. McClure, Charles A. Oliver, McCluney Radcliffe, P. N. K. Schwenk, William Zentmayer, and others.

CHICAGO.

Directors and Officers.—At a recent meeting of the stockholders of the Chicago Eye, Ear, Nose and Throat College, the following officers and directors were elected: Drs. Wm. A. Fisher, Adolphus G. Whippern, H. W. Woodruff, Thomas Faith, and John R. Hoffman. The directors thereupon elected Dr. Wm. A. Fisher President and Treasurer; Dr. Adolphus G. Whippern, Vice-President, and Dr. John R. Hoffman, Secretary.

Rejection of Inspection Plan.—Some time ago Mr. Hartung, Trustee of the Board of Education, made a plea for a more rigid examination of school children; but the school management committee of the Board has rejected the plan.

Opposition to the Location for the Erection of Hospital for Infectious Diseases.—As a result of a recent conference between Trustees of the Memorial Hospital for the Treatment of Infectious Diseases and owners of property in the vicinity of the proposed site for the institution, it was decided to call a public meeting of all persons interested in any way in the project to exchange views as to the direct danger of contagion and the benefits to be derived from the establishment of such an institution in that neighborhood. Dr. Billings explained the great need of such an institution in Chicago, and gave a brief outline of what are known as infectious diseases, their effects, and the best methods of treatment. He said there is no possibility of contagion from a properly conducted hospital. There is to-day in Chicago only one place where infectious diseases can be treated, and that is in the addition to the Cook County Hospital. No institution more beneficial to the public of the city of Chicago has been recently proposed. The aim is to treat certain infectious diseases, such as measles, diphtheria, and scarlet fever, in a scientific manner. This hospital is to be established on a purely philanthropic basis at the place where such diseases can be treated and studied from a scientific standpoint, in order that the germs of the disease may be located and proper means be determined upon for its extermination.

Compound Fracture of the Patella and Condyles.—At a recent meeting of the Chicago Orthopedic Society, Dr. A. E. Halstead reported the case of a man who, while riding on the platform of a fast train, was struck by an iron girder, prducing a compound fracture of the right patella. The external condyle of the femur was also nearly separated from the shaft, being attached only by the periosteum. A temporary dressing had been applied by an outside physician before the patient was brought to the St. Luke's Hospital. On September 8 last, the day of admission to the hospital, under general anesthesia, the wound was enlarged and the spicula of bone and the detached external condyle removed. The patella was found to have been broken into three fragments and the patellar ligament completely divided. After thorough lavage of the joint cavity with one per cent. solution of carbolic acid followed by decinormal salt solution, the patellar fragments were united by chromicized catgut suture. The ligamentum patellæ was sutured with mattress sutures of the same material. A cigarette drain was placed in the joint and the skin wound closed by silkworm-gut sutures. The drain was removed at the end of twenty-four hours. Following this a circular plaster of Paris cast was applied. This dressing was not changed for three weeks, when the skin sutures were removed. After this gentle passive movements and massage were practised daily. The result, as was shown, is ideal. The limitation of flexion and extension was but slight; the fragments of the patella have firmly united and the bone was freely movable. A case similar to this was treated by him at the County Hospital a short time ago. In this the patella was sawed through and the condyles partially divided by having the knee come in contact with the circular saw. The joint was thoroughly washed out and a large quantity of blood and foreign matter removed. The patella was sutured with catgut, the fragments replaced and the joint drained for twenty-four hours. In this case the result was all that could be desired. The man now has a freely movable joint, and no appreciable deformity.

CANADA.

Bill to Relieve Medical Students from Examination in the Province of Quebec.—Great interest and much indignation is being evoked among the medical fraternity of Montreal, the province of Quebec and as well among the medical student body over the appearance in the Quebec legislature of another of those bills having for its purpose the making of doctors out of students who have failed to pass the necessary and required matriculation examination. The present bill proposes to admit all who have begun the study of medicine prior to September last without passing their matriculation examination. Regularly qualified students denominate these medical "scabs" of whom there are said to be 260 in number. The profession in Montreal have held a meeting on the matter and are dispatching a deputation to the legislature to protest against this legislation.

Appointments.—Dr. L. deL. Harwood has been appointed to succeed the late Dr. Brennan as Professor of Gynecology in Laval University, and will also be chief of the gynecological department in the Notre Dame Hospital, Montreal. Dr. Harwood has also been chosen President of the gynecological section of the Medical Congress of French-speaking Physicians of North America which meets in Montreal this summer. For thirteen years Dr. Harwood has been connected with the gynecological department of Notre Dame Hospital.

Dr. Frederick Etherington, Kingston, Ont., has been appointed by Queen's Medical Faculty to the newly established tutorship in human and comparative anatomy. Dr. Etherington is now in Edinburgh but will return to Kingston in the early autumn and

hereafter devote all his time to the position to which he has been appointed.

These appointments have been made by Queen's Trustees to the Medical Faculty at Kingston: Professor of Pediatrics and Associate Professor of Obstetrics and Gynecology, Dr. Wood; Assistant Professor of Anatomy, Dr. Mylkes; Professor of Medical Jurisprudence and Toxicology, Dr. Williamson.

The Ontario Cabinet have approved of the following appointments on the staff of the University of Toronto: H. S. Hutchinson, M.B., and W. M. Meldrum, M.S., assistants in the chemical laboratory; R. H. Mullen, M.B., assistant demonstrator in pathology; F. W. Marlowe, M.D., F.R.C.S., Eng., assistant demonstrator in anatomy.

The Ontario Government have in contemplation the appointment of a physician to be general assistant to the various asylums of the province. He will act as a relieving officer.

To Check Consumption's Ravages.—A deputation from the Association for the Prevention of Tuberculosis waited on the Prime Minister, Sir Wilfrid Laurier, at Ottawa, last week, and asked for the establishment of a sanitarium in each of the provinces of the Dominion for the treatment of consumptive patients. It was pointed out to the Premier the need of such as there are annually 8,000 deaths in the Dominion from this disease. The Prime Minister pointed out that the British North America Act provided for provincial jurisdiction over hospitals, but he would consult with the Minister of Justice to see whether a point might not be stretched in this particular instance to provide for the Dominion aiding such institutions.

Montreal Western Hospital.—At the quarterly meeting of the Board of Governors of the Montreal Western Hospital held recently the question of the erection of a new wing was freely discussed, and it was at once decided to open subscription lists towards raising the necessary funds. The medical report for the quarter ending March 31 was submitted and it showed that during that quarter there had been admitted 133 patients, 61 males and 72 females. On January 1, 1904, there were in the wards 34 patients, 128 were discharged, 7 died and there remained 29 at the end of the quarter. In the out-door department the total number of consultations reached 1,783.

A Methodist Hospital for Toronto.—The late Hart A. Massey of Toronto, left $100,000 for the purposes of a Methodist hospital in Toronto, provided a like amount could be raised by private subscription. Now the leading organ of the Methodist body in Toronto, advocates that such an institution be gone on with, and it would appear as though Toronto really needed increased hospital accommodation, as during the past winter all of the hospitals were more than crowded. It is understood that the Medical Faculty of the University of Toronto, look upon it with much favor as the institution would likely be established close to their new medical building.

GENERAL.

American Medical Editors' Association.—The annual meeting of the American Medical Editors' Association will be held on June 6 at 2 P.M., Dennis Hotel, Atlantic City, N. J. Many interesting papers will be presented upon Medical Journalism and allied subjects by editors of recognized ability.

Gift for Tulane Medical School.—Under a decision rendered by the Louisiana State Supreme Court, April 25, Tulane Medical College receives the bulk of the estate of the late A. C. Hutchinson, who at the time of his death was President of Morgan's Louisiana and Texas road. Mr. Hutchinson's estate was valued at nearly $1,000,000 and most of it was left to Tulane University for the use of its medical college in the establishment and maintenance of a clinic and hospital for the sick.

State Board of Medical Examiners of New Jersey.—The examinations of the State Board of Medical Examiners of New Jersey will be held at Trenton, N. J., June 21 and 22. Application for the regular blanks should be made before June 11.

Statement by Prof. August Forel.—From August, 1879, until March, 1898, I was the Director of the Burghölzli Insane Asylum and Professor of Psychiatry at the University of Zurich and desire to make the following statement: Dr. Carl Bertuhringer, who designates himself a representative of the so-called Koenig Medicine Co., of Chicago, and who incidentally represents himself as a former assistant of Prof. Forel at the Burghölzli Asylum, was *never* my assistant and never an assistant at the Burghölzli Asylum. He did indeed study medicine in Zurich and, like other students, studied psychiatry with me, and practised in the Clinic as a so-called "Practikant," as did other students. Under these circumstances I once permitted him to hypnotize *one* patient. But he was never either my private or my asylum assistant and hence has no right to publish himself as such. Another Dr. Bertuhringer (Dr. Hans Bertuhringer) was actually assistant physician in Burghölzli and is now second physician at the Rheinau Asylum, Canton Zürich. But this is quite another person.—Dr. August Forel, former Professor at the University of Zurich, Chigny, Switzerland, April 6, 1904.

Florida Medical Association.—An amendment to the constitution and by-laws of the Florida Medical Association, making Jacksonville the permanent meeting place, has been submitted, and it has no opposition. Jacksonville also gets the president of the association for the ensuing year—Dr. E. N. Liell. The nominating committee of the house of delegates made the following report for officers for the ensuing year, which was adopted and said officers duly elected: President, E. N. Liell, Jacksonville; First Vice-President, J. W. Jackson, Miami; Second Vice-President, J. F. McKinstry, Gainesville; Third Vice-President, J. S. Holmes, Tampa; Secretary and Treasurer, J. D. Fernandez, Jacksonville. Resolutions were adopted strongly favoring a State Board of Medical Examiners. Drs. W. L. Hughlette, J. H. Durkee and J. N. Fogarty were appointed as a committee on revision of the constitution and by-laws, to report at the next annual meeting. A committee from the American Medical Association, relative to the importance of a uniform system of registration of vital statistics, was referred to the committee on legislation to prepare a bill to be presented at the next session of the Florida Legislature and to urge its passage. Following papers were read and discussed: Surgery—Dr. J. N. Fogarty, chairman. Treatment of Trachoma, by Dr. J. H. Claiborne of New York. Report of a Case of Hepatic Abscess, and Report of a Case of Strangulated Hernia, by Dr. J. N. Fogarty, Key West. Remarks on the Pathology and Treatment of Appendix Abscesses, with report of an illustrative case, by Dr. Carey P. Rogers, Jacksonville. Medicine—Dr. Arthur L. Izlar, chairman. Paper on Anchylostomiasis, with exhibition of the parasites, by Dr. Aug. E. Unter, Greenville. Paper on Static Electricity, by Dr. Will White, Live Oak. Treatment of Affections of the Skin by the X-ray; High Frequency and Brush Discharges from a Static Machine, by Dr. R. P. Izlar, Waycross, Ga. Cerebrospinal Fever at Madison, with Report of Cases, by Dr. A. L. Blalock, Madison. A Few Observations on Typhoid Fever, by Dr. J. D. Love,

Jacksonville. Diseases of Children—Dr. J. D. Bennett, chairman. Gynecology—Dr. L. M. Anderson, chairman. Ovarian Abscess; Sarcoma of Breast; Report of Rare Cases Operated Upon, with Specimens, by Dr. Edward N. Liell, Jacksonville. Leucorrhea in Married Women, by Dr. L. M. Anderson, Jasper. Subinvolution of the Uterus, by Dr. R. L. Goodbred, Mayo. Hygiene—Dr. Eduardo Andrade, chairman. Some Remarks on the Bacillus of Diphtheria and Anisokoria (inequality of the pupils), by Dr. Eduardo Andrade, Jacksonville. Paper on Cerebrospinal Fever (?) at Madison, A Report on the Recent Epidemic, by Dr. Hiram Byrd, Madison. Following resolution was adopted and the association adjourned *sine die: "Resolved,* That the Florida Medical Association hereby expresses sincere gratitude to the railroads of the State and the hotels of Live Oak for courtesies extended, to the citizens of Live Oak and the Suwannee County Medical Society for their free-handed, large-hearted hospitality, to the committee of arrangements, of which Dr. T. S. Anderson is chairman, for making the social features of the association a success, and to Col. Frank Drew of the Suwannee and San Pedro Railroad for his special attention to the profession, for furnishing his private car for excursion to Half Moon Lake."

American Proctologic Society.—The sixth annual meeting will be held at Atlantic City, N. J., June 8 and 9. The profession is cordially invited to attend all meetings. This is the program: President's Address, by W. M. Beach, M.D. Things of Specialism and of this Society that Make for Optimism; The Surgical Treatment of Prolapse of the Rectum, by J. M. Mathews, M.D., Louisville; Further Observations in the Treatment of Pruritus Ani with the Roentgen Rays, by J. R. Pennington, M.D., Chicago; My Method of Dealing with Perirectal Infections; Case Reports and Illustrations, by Jno. L. Jelks, M.D., Memphis; A Consideration of the Present Status of the Treatment of Cancer of the Rectum, by Lewis H. Adler, Jr., M.D., Philadelphia; Sterile Water Anesthesia in the Office Treatment of Rectal Diseases, by S. G. Gant, M.D., New York; The Utility and Practicability of the Flexible Rectal Tube, by S. T. Earle, M.D., Baltimore; Polyadenomata of the Rectum; Report of a Case, by G. B. Evans, M.D., Dayton; Some Observations on the Treatment of Rectal Diseases, by Wm. L. Dickinson, M.D., Saginaw; Results of the Treatment of Cases of Obstipation Due to Acquired Valvular Hypertrophy, by Thos. Chas. Martin, M.D., Cleveland; Rectal Valves, with Report of Operative Cases, by Louis J. Krouse, M.D., Cincinnati; Simple Fistula in Ano, by Howard A. Kelly, M.D., Baltimore; The Proctologist; the Necessity for His Being an Accomplished General Surgeon, by Floyd W. McRae, M.D., Atlanta; Clinical Cases, by Jas. P. Tuttle, M.D., New York; Adrenalin and Rectal Diseases, by A. Tierlink, M.D., Gand, Belgium; A Paper, by Geo. J. Cook, M.D., Indianapolis; One Thousand Operations for Hemorrhoids without a Death; with Remarks, by Leon Strauss, M.D., St. Louis.

The Sheppard and Enoch Pratt Hospital, Baltimore.—A Conference in Psychiatry and Neurology will be held at this hospital on Monday, May 9, 1904. Following is the program: On the Nature of the Disease Process in Insanity, by Adolf Meyer, M.D., Director of the Laboratory of the N. Y. State Hospital; Congenital Spastic Rigidity (Little's Disease), by William G. Spiller, M.D., of Philadelphia; Development of Insane Ideas, by Stewart Paton, M.D., Director of Laboratory Sheppard and Enoch Pratt Hospital; The Sensory Distribution of the Fifth Nerve, by Harvey W. Cushing, M.D., Johns Hopkins Hospital; Amaurotic Family Idiocy, by Bernard Sachs, M.D., of New York; Statistical Data in Paresis, by Edward N. Brush, M.D.; Mechanism of Exophthalmos: Pulse and Blood Pressure Curves in Manic Depressive Insanity, by William B. Cornell, M.D., Clinical Assistant Sheppard and Enoch Pratt Hospital; Spinal Puncture as a Diagnostic Procedure in Paresis, by George E. Chinn, M.D., Clinical Assistant Sheppard and Enoch Pratt Hospital; Delirium Following Operations on the Bile Duct, by J. M. T. Finney, M.D., Johns Hopkins Hospital; Demonstrations of Specimens, by George Streeter, M.D., Johns Hopkins Medical School; Methods of Examination by the Pupil, by Henry M. Thomas, M.D., of Baltimore.

OBITUARY.

Dr. Edward Livingston Trudeau, Jr., son of Dr. Edward L. Trudeau of Saranac Lake, died of pneumonia last Tuesday at his home, 772 Park Avenue. He was thirty-one years old, and was born at Saranac Lake. His academic education was gained at Yale University, where he was graduated in 1896. From Yale he came here to the College of Physicians and Surgeons. Having graduated in 1900, he spent two years in the Presbyterian Hospital, and then started to practice for himself last fall. In December he was married to Miss Hazel Martyn of Chicago. He was a member of the University and Yale Clubs, and attended the clinics of Bellevue and Vanderbilt Hospitals.

Dr. Thomas John Chew, a well-known physician of Washington, died at his home in that city last Monday, in the fifty-eighth year of his age. He was born in St. Mary's county, Maryland, graduated from Princeton and later from the medical school of the University of Maryland. After practising his profession in Prince George County, Maryland, for several years, he moved to Washington.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, April 23.

DEATH OF SIR HENRY THOMPSON—THE PIONEER OF ANTI-VIVISECTION IN ENGLAND—THE PROPHET OF SELF-HELP—THE PASSING OF A FASHIONABLE BONE-SETTER.

The medical profession of this country has lost one of its oldest and most distinguished members in Sir Henry Thompson who died on April 18 in his eighty-fourth year. A few weeks ago I saw him at a leading Club to which he had come to record his vote for a friend whose name had come up for ballot. He looked so feeble as he was helped down the steps and into his motor that it struck me the end was not far off. He was born at Framingham in Sussex in 1820. Of his early years nothing is recorded. There is a legend that he began life as an assistant in a shop. Whether there is any truth in this or not it is certain that he did not take up the study of medicine till comparatively late in life. He studied at University College, London, and took his degree at the age of thirty-two years in 1852 at the same time as his fellow-student, Joseph Lister. He soon afterward married Miss Kate Loder, a well-known pianist, whose earnings smoothed his path to success in his profession. Early in his career he specialized in genito-urinary diseases. He was, I believe, one of the founders of St. Peter's Hospital for Stone, but had to resign his connection with that institution on his appointment to the surgical staff of University College Hospital. He rapidly made his way to the front in his own line, and in 1863 he operated on the late King of the Bel-

gians. This brought him, in addition to a fee of $15,000, the honor of knighthood and a vast increase of practice. In 1872 he operated on the Emperor Napoleon III., but the fatal issue of the case exposed him to severe criticism not only among French surgeons but among his own countrymen. His treatment of stricture in the person of a lord-in-waiting was severely animadverted on by so competent a judge of this branch of surgery as our gracious sovereign Edward VII. In operating Thompson took for his motto Danton's maxim, *de l'audace, toujours de l'audace,* not allowing himself to be deterred by considerations that would have made a careful surgeon stay his hand. Often the event justified his boldness, but sometimes the patient paid the penalty of rash surgery. Then the blame was laid on assistants or nurses. I have seen him perform lithotomy, using considerable violence in extracting the stone, and when post-mortem examination showed that the bladder had been extensively torn, calmly attribute the disaster to an eminent colleague who had held the staff. He was a showy operator, with a shrewd eye for dramatic effect in his entrance, his pose and in his handling of instruments. Within his own province he was for a long time unrivaled in this country. The collection of calculi which he presented to the Royal College of Surgeons bears testimony to the extent of his practice. In general surgery, which his position on the staff of a general hospital obliged him occasionally to undertake, he was somewhat of a terror to his colleagues. It used to be said that he was stopped in the act of attempting to remove the body from a limb, and Berkeley Hill, who had been his pupil, carried with him to the grave the scars of cuts made by Thompson recklessly wielding an amputating knife.

Thompson's professional income was estimated at from $50,000 to $75,000 a year. In his private practice he always operated as early in the morning as possible so that, if bleeding occurred, it might be dealt with in daylight. Probably no surgeon was ever more disliked by his patients. In his later years indeed he would have lost much of his business had he not had the good fortune to have assistants whose devoted attention and charm of manner smoothed away the asperities of their chief. It must be added that Thompson was not popular with his professional brethren. For this his self-assertiveness and combativeness were mainly responsible. There is a curious unconscious revelation of his own character in the novel which he wrote under the name of "Pen Oliver." A medical student calls on an eminent physician to ask for some information not of a professional nature. On leaving he hands the doctor a fee which is accepted as a matter of course!

Thompson dabbled in many things besides surgery. As has just been mentioned he wrote novels of indifferent literary quality. He achieved a respectable mediocrity as an amateur painter, and was frequently allowed to exhibit his works at the Royal Academy. He was a collector of pictures and china. He had an astronomical observatory of his own. He was the author of books on gastronomics and gave dinners called "octaves" because there were eight guests and eight dishes. It is recorded that he once received a visitor in his studio in which he had for companions a young python and a boa constrictor. This recalls Sarah Bernhardt, and indeed Thompson was always a *poseur.* He had enough of the artistic temperament to make him eager to keep himself in the public view and to impress himself on all with whom he came in contact. It must, however, in fairness be acknowledged that he did good work as a social reformer in more than one direction. To him it is mainly owing that cremation has come to be recognized in this country as a lawful mode of disposing of the dead. He was a strong advocate of temperance not only in drinking, but in eating to excess, to which he attributed many of the infirmities that make old age a painful disease to a large number of persons. Within the past year or two he preached the hygienic advantages of automobilism, especially as a remedy for insomnia. Only a few weeks ago he was vigorously denouncing the dirty condition of our London streets and the apathy of our municipal and sanitary authorities with regard to this evil. With all his defects of character, it must be admitted that Sir Henry Thompson was a man of vigorous personality, a leader in his particular province of surgery and a many-sided and accomplished man.

Cremation finds favor with a good many people because it prevents any possibility of premature burial. A notable instance of the haunting fear of this accident is seen in the case of Miss Frances Power Cobbe, well known as an advocate of women's rights and an uncompromising and, it must be added, unscrupulous opponent of vivisection, who died a week or two ago. Her will contained a solemn injunction that her medical attendant should perform "on my body the operation of completely and thoroughly severing the arteries of the neck and windpipe, nearly severing the head altogether, so as to render any revival in the grave absolutely impossible. If this operation be not performed and its completion witnessed by one or the other of my executors and testified by the same, I pronounce all the bequests in this will to be null and void." A letter written by Miss Cobbe to the President of the London Association for the Prevention of Premature Burial, some time ago, shows how great was her fear of being buried alive. She said: "I am obliged to you for sending me 'Perils of Premature Burial.' It is a terrible subject, and one that has haunted me all my life, insomuch that I have never made a will without inserting a clause requiring my throat to be cut before I am put under ground. Of course, one can have no reliance on doctors whatever, and I have myself known a case in which a very eminent one insisted on a coffin being screwed down because the corpse looked so lifelike and full of color that the friends could not help indulging in hopes. My great grandmother, after whom I am called, a famous heiress, was a notable case of narrow escape. As a girl she passed into a state of apparent death, and a great funeral was ordered for her. Among the guests came a young girl friend, who insisted that she was not dead, and raised such a stir that the funeral was postponed, and time was allowed to pass till the marvel became that there were no signs of change. I could never ascertain how long this comatose state lasted before she recovered; but she *did* recover, so thoroughly that after her marriage with Richard Trench, of Garbuly, she became the mother of twenty-two children. Obviously this was no case of a feeble, hysterical, cataleptic subject." Among the well-known people who have been haunted by the fear of premature burial may be mentioned Harriet Martineau who bequeathed her doctor $50 on condition that he saw that her head was amputated before interment; Lady Burton, wife of Richard Burton the explorer, who directed that her heart should be pierced with a needle and her body submitted to post-mortem examination before burial; and Edmund Yates, Editor of the *World,* who left a fee of $100 to his doctor for the same purpose. Miss Cobbe's instructions were carried out by Dr. Hadwen, of Gloucester, a prominent antivivisectionist and antivaccinist. Miss Cobbe was the Cato of the antivivisection cause. Her cry was *Delenda est Carthago,* and she would accept no compromise. This led to a split in the camp, Mr. Stephen Coleridge becoming the leader of a party which professes to aim at the regulation of vivisection, while Miss Cobbe and her intransigent followers insisted on its suppres-

sion. With this object she founded a new society which issued a journal entitled *The Abolitionist*, in which she preached her views with a virulence and scurrility which clearly displayed the cruelty in regard to man that so often underlies the excessive love of animals. She had, however, lost whatever importance she may ever have possessed as a controversialist, since her methods were exposed by Sir Victor Horsley at the Church Congress held at Folkestone twelve years ago.

Samuel Smiles, the author of Self-Help, a book which reckons its sale by millions and which has been translated into nearly every European language, died a few days ago at the patriarchal age of ninety-two years. He began life as a medical practitioner at Haddington, but success not coming speedily enough he became in turn editor, secretary of a railway company, and author of popular biographies of famous engineers and other heroes of practical and business life. His writings have had an immense influence on aspiring young men of the artizan and small tradesman class, but at the present day his teaching, which may be summed up in the phrase, "How to make the best of Both Worlds," has rather lost its hold on the public mind.

English society is mourning the death of a fashionable bone-setter, "Professor" John Washington Atkinson. He knew more of the anatomy of the human body, for he was a qualified veterinary surgeon, and would probably have found it easy to obtain a regular diploma in medicine. But the brain, of what Falstaff calls "this curious-compounded clay, man," being what it is, he doubtless found it more profitable to pose as having knowledge not revealed to orthodox practitioners. He professed to be a specialist in "bloodless surgery" and when Lorenz was over here denounced him in the "society" papers with the fervor of a rival prophet. He had an enormous practice among members of the "upper ten" and had as many as a dozen assistants at work on his patients. Royalty did not disdain to patronize him, and some of the foremost men in the surgical world had to meet him in consultation—of course privily and under seal—under penalty of losing their august patients.

THE NEGRO AS A DISTINCT ETHNIC FACTOR.

To the Editor of the MEDICAL NEWS:

DEAR SIR: There are several important facts belonging to the Negro Question that unfortunately are only well understood by the scientist and physician. Those who have lived among the negroes and studied their inherent race characteristics; and the medical men who have studied the African in the hospital and on the dissecting table, are fairly agreed upon one fact, *i.e.*, that the negro is a distinct ethnic factor in civilization; that his animalism is a biologic factor no more amenable to educational influences than is the biologic origin of his color or odor. The anatomical and physiological conditions of the African must be understood; his place in the anthropological scale realized and his biologic basis accepted as being unchangeable by man before we can scientifically and humanely place this ethnic factor where it belongs. Let it first be understood that there can never be any interracial relations of Caucasian and African, socially or sexually. The African is unlike the Caucasian in *secondary* sexual characters, and this being so he can never be absolutely alike in the highest psychical processes. These facts are ignored by those who would have the African brought into social relations with the white woman, and by those who ignorantly believe that a few years of Latin and Bible teaching will deprive him of periodical erethisms of the sexual centers. When education and religious teachings change the biologic basis of his color it will also be able to change the anatomical and physiological reason for his sexuality and bestiality.

The Caucasian as a race is moral; the African as a distinct race is not immoral, he is unmoral, and no amount of education or training is going to change a non-existing element. This fact should never be lost sight of; it is one of the causes which produce the great psychical differences between the white and colored races. Biologic differences between races of distinct ethnic origin result in psychologic and social differentiation impossible to harmonize.

It is unscientific to attempt to study the adjustment and laws of society without a thorough knowledge of the structure of its individual parts. It is useless for philanthropists, preachers, and editors in the north, or any other part of the country where the African is not understood or studied, to talk about school and college education controlling his hereditary racial instincts. His individual parts are not known to such people. Only he who knows life from the monad to *cell complex man* can intelligently discuss the negro question. To understand the ineradicable racial traits of the African one must know the structural life and habits resulting from a certain biologic basis. We must penetrate beneath superficial ideas, throw aside prudish philosophy, and open our eyes to anatomical and psychical facts if we wish to render justice to civilization. Silence regarding sexual matters must give way to vocative statements; for it is by these unavoidable statements that we must be guided in dealing with the Negro Question.

This great question can only be solved by dealing in concrete facts, not abstract principles; the latter method has been too long in vogue and has resulted in a miserable failure. As an example: The belief that the African was capable of living as hygienically and morally as the Caucasian was the great mistake made by those who deal in abstract principles. Physicians know that this false idea sets in action three of the most powerful enemies of mankind; insanity; tuberculosis and syphilis —diseases which have been so conscientiously studied by the best minds during the last ten years, and whose causes and remedies we are beginning to comprehend. There is every prospect of checking and reducing these diseases in the white race, if this race is socially—in every aspect of the term—quarantined from the African.

It is not necessary here to dwell on the main anatomical points of difference that are known to exist between the Caucasian and the African. These variations show conclusively to the student ineradicable racial traits. The phylogeny of the negro will exert itself under all conditions. Those who would give the African equal social recognition, who sincerely believe that instruction in the humanities will in a few decades bring him to appreciate and understand the ethical and moral code of the Caucasian, forget that centuries of contact with the brain worker has not produced any mental effect in the African beyond those emanating from the medulla. Education as it is understood by the white man will never, in the full-blooded African, affect centers above those governing the animal instincts. It is a fact observed by those who are in a position to study the full-blooded negro that with the advent of puberty all intellectual development ceases; even the "sound memory," which is the cause of much apparent precociousness, seems to be submerged by the growth and activity of sensuality. With the advent of puberty the negro shows his genesic instincts to be the controlling factor of his life. These take hold of religion, control his thoughts, and govern his actions. In the increase of rape on white women we see the explosion of a long train of antecedent preparation. The attacks on defenseless white women are evidences of racial instincts that are about as amena-

ble to ethical culture as is the barrier which keeps the philanthropist and moralist from realizing that the phylogenies of the Caucasian and African races are divergent, almost antithetical; and that it is gross folly to attempt to educate both on the same basis.

William Lee Howard.

Baltimore, Md., April 20, 1904.

SPECIAL ARTICLE.

CYTOTOXINS AND CYTOTOXIC IMMUNITY.*

BY PROFESSOR PAUL EHRLICH, M.D., LL.D.,
OF FRANKFORT-A.-M., GERMANY.

In opening this lecture, Prof. Ehrlich traced the development of our knowledge concerning bacteriolysins and cytolysins and then alluded to the importance of this domain of research. The extent which the subject has attained is shown by the enormous amount of literature which has appeared during the last few years,—in quantity almost too great to master.

The mode of action of amboceptors and complements was first considered. The interpretation of Pfeiffer, Metchnikoff and Bordet's demonstration of the participation of two substances in producing bacteriolysis was made clear by means of absorption experiments and experiments at low temperatures. This led to the establishment of the amboceptor theory. The amboceptor, which is the specific product of immunization, unites by means of one haptophore group with the receptor of the susceptible cell, and by means of another haptophore group, with the complement. The complement has one chemical group suitable for union with the amboceptor, and another, the zymotoxic complex, which causes the injury to the cells. In opposition to this, Bordet devised his theory of "sensitization."

For the theory of direct union, between cell-receptor, amboceptor, and complement, Ehrlich then submitted the following evidence: (1) The demonstration of well-established chemical analogues, as seen in the anilin dyes. (2) The side-tracking of complements by an excess of free amboceptors, as was proved in the case of bacteriolysis by Neisser, and also, firmly established by Morgenroth for hemolysins by the employment of anti-amboceptors. (3) The existence of products from the breaking down of amboceptors,—amboceptoroids, which are no longer anchored by the cell but are still able to divert complements. The amboceptor then really acts like the mordant of a dye. The complete hemolysin thus forms an analogue of a toxin, in which one part, the amboceptor, corresponds to the haptophore group, the second part, the complement, to the toxophore group.

The complement, contrary to the conception of Bordet, is believed by Ehrlich to be made up, not of a single unit, but of a great many partial-complements, which side by side, and simultaneously, become attached to the amboceptor. Accordingly the amboceptor contains a whole series of complementophilic groups, and not a single one, as was first supposed. The diverse amboceptors which can belong to one animal species differ specifically only in those haptophorous groups which are concerned in the union with the cell, while they are identical, or at least very similar, as far as their complex complementophilic component is concerned.

The proof of the multiplicity, as opposed to the unity of the complement can be shown by the method of partial absorption, by the selective destruction of single partial-complements, by the demonstration of anti-complements which inhibit only a certain part of the complement action, and finally, by the evidence brought forward by Metchnikoff, that by the disintegration of microcytes or of macrocytes, at least two complements arise, which differ in their effects, one producing hemolysis, the other, bacteriolysis.

In each individual instance of lytic action it is not necessarily the whole series of complements, but only a certain fraction of them which he termed the dominant complements, that is concerned.

Ehrlich then discussed the theory of amboceptors. The latter are cell products. In the protoplasm of cells, in addition to the simple receptors which give rise to the antitoxins, there are more complicated receptors, which serve in the absorption of the more complex albuminous molecules. Two varieities of these receptors must be distinguished. In the first place, receptors of the second order are those, which in addition to their anchoring haptophore groups, possess a chemical complex which is distinguished by its power to set going coagulative processes, and which is generally quite resistant to heat. As the result of immunization with cells or albuminous material, receptors of this order appear in the serum as coagulins or agglutinins.

In the second place, amboceptors arise from receptors of the third order, which are concerned with the fixation and assimilation of the very largest food molecules. For the catabolic changes of these molecules there are needed a whole sequence of processes, which can only be carried out by a multitude of fermentative agents, such as the complements. Corresponding to this conception, the receptors possess a multitude of complementophilic groups. The reason why these adjuvant groups do not actually occupy the receptors, which would present the simplest solution, may be looked for in their extraordinary lability, which may render necessary a continual rehabilitation and renewal of the fermentative apparatus. This view is favored by the fact that such an arrangement does exist in the case of the receptors of the second order, whose agglutinophore complex, as already mentioned, is relatively stable.

The purpose of protecting these complements from destruction would not be attained if the affinity of the complementophilic groups were such that the complements were continually being absorbed by the receptors. A well adjusted mechanism controls the complement absorption, for by union of the haptophore group with a nutrient molecule, the avidity of the complementophilic group of the receptor is so augmented as to permit its combination with a complement. This is an economy which enables the labile ferment to reach the cell at exactly the favorable moment for its utilization. The proof of the actual occurrence of this increase is furnished by Bordet's phenomenon so-called, in which a selected material, after it is laden with amboceptors, is able to remove complements suitable for itself and also for all other combinations.

Amboceptors can be produced by immunization which are specific antibodies for a great number of albuminous materials, and Ehrlich alluded to the fact that the study of these amboceptors will probably give us a much clearer view than we can now obtain, into the process of assimilation.

We must suppose that those parts of the protoplasm which are bearers of the receptors of the second and third order, must be completely immune to the destructive action of the zymotoxic groups of the complements. There is no direct proof of the partial separation of these particles of protoplasm, yet such a separation probably exists, from the fact that complements are able to destroy their own cells if they are artificially brought into relationship with certain other constituents of the cell. This is effected with extreme ease by the aid of cytotoxic amboceptors, which can be readily produced for all kinds of cells. In this connection he alluded to the

* Third Herter Lecture, delivered at Johns Hopkins University, Medical Department, April 14, 1904.

fact that the erythrocytes of a sheep, which are laden with specific hemolytic amboceptors, will show no signs of injury so long as they are suspended in normal salt solution, but they will be dissolved at once upon the addition of the same serum which was removed from the sheep with the erythrocytes. This demonstrates that the most important agents of the body economy are turned into deadly weapons if brought into a false relation to the protoplasm.

Prof. Ehrlich next considered the theories of the pleuralistic conceptions of cells. Cells are complexly constructed organisms. Each of them possesses an extreme number of separate components, which from a purely theoretical point of view are capable of producing an equal number of specific reaction products. It is probable that each morphologically different cell constituent, such as the protoplasm, nucleus, etc., is capable of producing a serum specifically antagonistic to this particular structure, which serum in turn may be made up of a whole series of partial components.

The number of specific antibodies produced by immunization is usually much smaller than the number of antigenetic substances inoculated. Among the conditions which lead to this result are the deficiency of suitable receptors in the immunized species of animal, and insufficient formation or insufficient shedding of these receptors. He then described the methods for demonstrating the phenomena of pleurality, including the crossed absorption experiments and employment of antiamboceptors, and the examples from hemolysis. An immune serum in the former restricted sense of absolute specificity does not exist, we can only speak of the specificity of one amboceptor type for one definite causative substance. Since the immune sera contain a great number of different fractional components, which in turn can occupy a correspondingly great number of receptors, and since not the whole number of receptors of any one cell are peculiar to this cell, but a variable number of them are also common to other nearly related cells, we must conceive that a serum produced by immunization with a certain type of protoplasm, while it exercises its chief action against this protoplasm, also exhibits its action upon a whole series of other substrata of protoplasm. The more closely related the receptor apparatus of two immunity producing agents is, the more completely do the sera produced by them correspond in their action.

SOCIETY PROCEEDINGS.

NEW YORK PATHOLOGICAL SOCIETY.

Stated Meeting, held January 13, 1904.

The President, William H. Park, M.D., in the Chair.

Blood from Cases of Lymphatic Leucemia.—Mr. L. B. Goldhorn presented a number of specimens of this material. He said that from the hematological point of view, which was the only proper one, lymphatic and myelogenous leucemia could be easily separated, while from the point of view of pathological anatomy such distinctions could not be made. It seemed to the speaker that the myelogenous form was, so to speak, a new growth of those centers of the bone marrow which give origin to the granular leucocytes of the blood, while the lymphatic form was a hyperplasia of those centers which supply the blood stream with lymphocytes. Both types of tissue could form metastases like malignant new growths, the pathological changes in the viscera depending upon them, and just as no two cases of carcinoma with metastases are alike, so no two cases of leucemia are alike. Inasmuch as leucemia is not a disease of the blood proper, it was therefore to be expected that the changes in the blood and plasma would vary as the nature and the seat of the matastases vary. In myelogenous leucemia the speaker was inclined to look upon the mast cells as the only characteristic form, —their enormous increase being so constant a feature that they appear as pathognomonic, for while there are many diseases in which the myelocytes are increased, myelogenous leucemia seemed to be the only one in which these cells were so abundant as to give a characteristic aspect to the blood picture. The speaker suggested for rapid demonstration of this type of cell a saturated solution of a basic dye such as methylene blue or dahlia, in ordinary wood alcohol. The granules are brilliantly stained by applying this solution to the unfixed blood smear for a few seconds, and then washing in distilled water. In what has been termed mixed leucemia an enormous increase in the various granule bearing leucocytes was seen together with what appeared to be large mononuclear cells. This, in the speaker's opinion, was not a leucemia of double, that is, of myelogenous and lymphatic origin, but one of a purely myelogenous source in which the mononuclear cells were not lymphocytes but the mononuclear and transitional cells of Ehrlich. A mixed leucemia would, under these circumstances, appear to be a very rare occurrence, as rare as carcinoma with a sarcomatous element. In determining the hemoglobin in these cases, Mr. Goldhorn recommended the use of the Tallqvist hemoglobin book because its readings were not interfered with by the greatly increased number of leucocytes. He could not recommend this book for general use, because in all cases of lessened oxygenation of the blood, and especially where marked cyanosis was present, the readings were much too high.

Dr. F. C. Wood said that the difficulty of determining the hemoglobin in blood containing a large number of leucocytes could be easily overcome by using the Fleischl-Meischer hemoglobinometer, and after filling the diluting pipette with the blood and distilled water to blow out this mixture into a centrifuge tube and remove the white corpuscle by centrifuging. This would take only a few minutes, and the cells of the hemoglobinometer could be filled with the clear supernatant fluid and an accurate determination easily carried out. If the hemoglobin content were low, a one to one hundred mixture could be made and centrifuged, instead of the usual one to two hundred dilution used for the Fleischl-Meischer apparatus.

Comparative Morphology of Vaccine Bodies.—Dr. James Ewing presented specimens and drawings of vaccinia of the rabbit's cornea, frog's skin and cornea, and mud-puppy's (*Necturus*) skin; diphtherial necroses of the rabbit's cornea, frog's cornea and skin and salamander's skin, and the skin of a case of measles dying in the full eruptive stage of the disease. The specimens were stained by fuchsin and indigo carmine (Borrel's method). In describing the specimens the speaker said in taking up the study of variola in 1901, he had chiefly in mind the hope that the application of Nocht's stain to smear from the lesions of the skin and respiratory mucous membrane might be successful in demonstrating the presence of a protozoon. The results proved negative. Likewise the results of a study of fresh material examined on a warm stage, from variola and vaccinia were negative not only as to the presence of any recognizable protozoon but as well in regard to the question of ameboid motion of any definite structures in the tissues. The histological study of the tissues while defining a great many structures which suggested a protozoon origin had left him as it had previously left the majority of observers, not only in doubt about the origin of many of the suspicious forms, but with the moral cer-

tainty that the morphological study of the vaccine body series in variola and vaccinia could hardly be relied upon to yield positive conclusions even to the most experienced observer, while the type of evidence reasonably demanded to convince others of one's conclusions regarding the nature of these bodies seemed much less likely to be obtainable from this line of study. It seemed possible, however, that the study of changes in the epithelial cells of other classes of animals which might be made to react to vaccine could yield information of value by establishing a comparative morphology of vaccine bodies. The conflicting statements regarding the possibility of producing genuine vaccine bodies by other means than by vaccine also suggested that this subject deserved attention from the same point of view, and would especially assist in separating simple degenerative products from what might prove to be a real protozoon among the host of peculiar structures seen in variolous lesions. With these objects in view he had compared the changes occurring in the epithelial cells in human variola with those occurring after vaccination in the rabbit, frog, mud-puppy (*Necturus*) and salamander, with those resulting from the action of diphtheria toxin, after Sikowsky's suggestion, in the cornea and skin of the rabbit, frog, and mud-puppy, and with those seen in measles. Among the characteristics of the ordinary vaccine body might be mentioned the perinuclear position which is not invariable, the clear zone surrounding the body which is probably an artefact but a very constant one with the larger bodies and the variable staining reaction, some bodies being basophile, others acidophile, many showing both basophile and acidophile portions. The more recently added members of the series, including signet rings, rosettes, crescents, and "encysted" bodies, must be regarded at present as of uncertain relation to the simpler bodies first described by Guarnieri. According to his own observation the most significant features of the ordinary vaccine body is the fact that some are basophile, some acidophile, and others possess both basophile and acidophile portions either compact or granular or vacuolated.

Bodies Produced by Vaccination of the Frog's Skin and Cornea.—Proceeding to a brief description of the bodies observed apart from variola in man or vaccinia of the rabbit's cornea, might be mentioned first the bodies produced by vaccination of the frog's skin and cornea. Here he had more negative than successful results and had inoculated many frogs without any definite effect on the epithelial cells. In the best results a localized lesion of the cornea, and a more diffuse lesion from extensive scarification of the skin were observed. In both locations the bodies were much more numerous than in variola, and included many small acidophile and basophile perinuclear forms, some rings, cysts containing 10 to 50 homogeneous globules or vacuolated bodies or rings. In the frog's skin the specimen exhibited seemed to show rather clearly that many of the bodies had resulted from the comminution of the nucleus Others had a different origin which seemed explicable from the changes produced by diphtheria toxin. In the same locations in the frog diphtheria toxin in twenty-four to forty-eight hours induced cell changes and nuclear and cytoplasmic alterations which seemed to differ from those following vaccination only by their greater intensity. Mechanical influence might have been responsible for some of the changes following vaccination of the frog's skin but not in the cornea, but numerous negative results of vaccination of the frog's skin indicated that the effects of trauma were unimportant. He was inclined to believe that a true progressive vaccine process existed in the skin of the frog in the case exhibited since this lesion was so extensive.

Comparing the lesions produced by diphtheria toxin with those of vaccine in the rabbit's cornea, there appeared many points of similarity and quite as many differences. The toxin failed at least after forty-eight hours to cause the swelling of the cell layer characteristic of vaccine, and the lesion was more intense and the bodies more numerous than with vaccine. Among the changes produced by diphtheria toxin were (1) keratinization of the whole cells or of the whole cell layer, the nuclei staining blue after Borrel's stain; (2) keratinization of cell body alone; (3) keratinization of the perinuclear zone of cytoplasm; (4) separation in globular form of keratin masses which, either in the same or in other cells assumes the perinuclear position and appearance of the vaccine body; (5) transformation of the cell into a cyst containing a great variety of globular, or vacuolated and ring-shaped bodies. Some of these were strikingly geometrical in form and might be described as rosettes. (6) A peculiar series of changes consisted in the formation in the nucleus of one or several large or minute acidophile rings. (7) From the nucleus was sometimes extruded a large strongly acidophile cyst-like body inclosing acidophile granules and minute rings. (8) The peripheral portion of many of the globular bodies broke up into granules which were often regularly arranged in a fringe about a homogeneous central body which was either acidophile or basophile. The fate of all that portion of the nucleus except the nucleolus was a matter of great interest. Careful study of the specimens seemed to demonstrate that the nuclear material apart from the nucleolus did not become incorporated in the fuchsinophile substance but took the form of the basic staining vaccine body. In many nucleoli there appeared a homogeneous basophile substance which sometimes showed convoluted edges, or many regularly placed vacuoles or became broken up into rings. This substance stained brown or blue with Borrel's method, and black after iron-hematoxylin. Very similar vacuolated nuclear bodies were seen in measles. Fuchsinophile intranuclear vacuolated bodies and rings were encountered in diphtherial necroses, and in some foci the changes consisted almost exclusively in the formation of intra- and perinuclear acidophile rings. In variola, especially in the trachea, the multiple nucleoli of the epithelial cells could often be seen to increase in size and to develop several small or large vacuoles, and to appear as congeries of rings. In general it could be said that while diphtheria toxin does not reproduce the corneal lesion of vaccinia it produced definitely many of the typical forms of true vaccine bodies.

In the rabbit's trachea diphtheria toxin produced a great variety of spheroidal or ring-shaped, or vacuolated intracellular bodies, many of which resembled the bodies seen in the human trachea in variola. In the rabbit's bladder, diphtheria toxin produced the usual changes in the epithelial cells, and here many red blood cells had been extravasated into the epithelial layer, fragmented, and lodged between the epithelial cells or about their nuclei. In the mud-puppy (*Necturus*) the inoculation with vaccine in the skin and cornea produced a good deal of keratinization of cells. This formation of homogeneous asidophile material could be seen very definitely in the very large cells of this animal as beginning in the cytoplasm near the nucleus and forming an isolated perinuclear mass resembling a huge vaccine body. Yet the resemblance to the vaccine bodies of the rabbit was extremely distant on account of the large size of the cells. The nucleous and body of the pigmented cell of the skin in necturus frequently became fused into a homogeneous mass and assumed a perinuclear position in other cells. Changes in the nucleoli were not ob-

served in *Necturus*. Inoculation of the skin of the salamander produced much the same lesions as in the frog, but the bodies were much larger and much difficulty was experienced in distinguishing the globules derived from epithelial cells from fragments of red blood cells.

Measles.—In the skin of a case of measles dying in the full eruptive stage of the disease, the epithelial cells in numerous marked foci and diffusely, were found to contain a great variety of intracellular bodies many of which were identical in appearance with the bodies in variola. In certain foci these bodies were much more numerous than he had ever seen in variola. They presented a greater variety of form, and the same variation between acidophile and basophile staining tendency. Keratinization of complete cells and fragmentation of these cells was frequently encountered. Indeed the whole process seemed to be a part of the hyperkeratosis which produced the large flakes thrown off in desquamation in this disease. Among the separate bodies were some which might be described as rings, basophile crescents with acidophile nuclei, vacuolated crescents, pyramidal bodies capping cell nuclei, large basophile or acidophile bodies with vacuoles symmetrically arranged, and many other forms shown in the colored sketch. He could find no satisfactory evidence that these bodies had any other origin than from the epithelial cell bodies and nuclei. After Borrel's stain, the resemblance of these bodies to those produced by diphtheria toxin, or to those seen in variola appeared to be distinct. The acidophile forms seemed traceable to nucleoli and keratinized cell bodies, and the basic bodies, blue and brown, appeared to come from the basophile elements of the nuclei. Nevertheless the resemblance of many of these bodies to developmental forms of a hypothetical protozoon was admittedly great. The occurrence of keratinized cells in the epithelial layer had been described and depicted especially by Bosc in variola and *clavelée* (Cent. f. Bact., Bd. 34, p. 413). This observer correctly stated that whole keratinized cells were readily separated from the "infected" cells in these lesions, but he did not appear to have considered the possibility that these cells might become fragmented and the fragments englobed by healthy cells. Many of the parasitic forms appearing in his sketches were definitely reproduced in the lesions caused by diphtheria toxin.

Anna Foa had recently reported (Archives de Parasitologie T. VII, p. 508) that the bodies produced by diphtheria toxin did not resemble true vaccine bodies which, however, she believed to be degenerative products. No details of this failure to verify Sikowsky's results were given and this part of her extensive study of vaccine bodies did not appear to have been regarded as of much importance.

Summary.—The conclusions drawn from this study were as follows: The inoculation of vaccine and diphtheria toxin in various animals produces a peculiar form of coagulation-necrosis, or keratin necrosis which has been imperfectly recognized and understood, and which results in the formation of homogeneous acidophile material that may be drawn out into fibrils, or broken up into globules, or granules, vacuolated, and englobed by the more healthy epithelial cells in which it appears in the positions occupied by vaccine bodies. This type of necrosis occurs in variola and measles and the bodies produced by it are abundantly present in the epithelial lesions of these diseases. Some of these bodies have been included in the cycles of hypothetical protozoa described by many authors in variola. While forms of a true protozoon may be mixed up with these degenerative products in variola and measles, he was unable to convince himself that any such theory was necessary to account for the suspicious bodies. Some of the suspicious bodies in variola he had been unable to find fully paralleled in diphtherial necroses, especially the presence within the nuclear membrane of several distinct rings of considerable size, and he intended to repeat the systematic comparison of variolous and diphtherial lesions before concluding definitely that no protozoon could be demonstrated in variola and measles. He was strongly of the opinion, however, that the intranuclear rings were vacuolated fragments of nucleolar and nuclear material.

Vaccine Bodies in Monkey's Skin.—Dr. A. W. Williams demonstrated (1) vaccine bodies in monkey's skin (prepared by Dr. Flournoy); (2) smears from vaccine vesicles (Wright's stain.) Dr. Williams said that the specimens shown by her were labeled in detail and it would not be necessary for her to describe them further. She said that since she had had the privilege of examining carefully Dr. Ewing's interesting specimens of rabbit's corneas showing in the epithelial cells changes due to diphtheria toxin, she was more than ever inclined to think that most of the changes seen in the epithelial cells in the lesions of smallpox and vaccinia are due to degeneration and necrosis of the cell contents.

Smears from Vaccine Vesicles.—The two smears, one from vaccine vesicles, and the other, a control from staphylococcus pustules of the rabbit's skin, were brought to show that both have epithelial cells containing similar vaccine-like bodies and that both have a large number of granules in and between the cells. These granules are eosinophile, basophile and a mixture of both. Some of them show beautiful signet ring shapes. The granules have been studied because of the fact that from rabbits vaccine virus filtered through two thicknesses of the finest filter paper has been obtained an almost clear filtrate which was bacteria-free (according to the usual tests) and in which only small granules were seen, but which produced an abundant typical vaccinia when rubbed on freshly shaved rabbit's skin. It has been impossible, however, so far, to discover characteristic granules, though many smears have been examined. Dr. Field kindly assisted in the preparation and examination of these smears. Among various stains used, Wright's modification of Romanowski's stain was chosen for the demonstration of these smears because it had been used recently so successfully by Wright for staining the intracellular protozoon causing Delhi boil.

Trypanosoma Lewisi.—Wright's method was also used for the stained specimen of *Trypanosoma Lewisi* which was demonstrated by Dr. Williams. Dr. Williams thought this *Trypanosoma* might be of interest because it came from one of Novy and MacNeil's test tube cultures, the first pure cultures of a protozoon which have been obtained on artificial culture media. The specimen given to Dr. Park by Dr. Novy about two weeks ago was inoculated into the peritoneal cavity of a while rat; the rat was killed on the eleventh day following, and from its heart-blood were made the two specimens shown, one a hanging drop and the other a dried film. The *Trypanosoma Lewisi* is a flagellate formed frequently in the blood of rats, but seldom causing the death of the animal. This flagellate is also of interest from the fact that it is very similar to the *Trypanosoma Brucii*, the cause of the fatal nagana or tsetse-fly disease of horses in West Africa, and the *Trypanosoma Evansi*, the cause of surra a similar disease met with in India. Since 1901 a number of cases of human infection by an apparently distinct species of *Trypanosoma* have been reported.

Dysentery Bacilli.—Drs. William H. Park and Katherine R. Collins presented a paper on the subject of the dysentery bacilli grouped according to their agglutinins with sera rendered specific by the elimination of the less specific group of agglutinins through absorp-

tion. Dr. Park said his reason for again bringing the subject of agglutination in connection with the dysentery bacilli before the Society was because recent results which they had obtained from the saturation with various bacilli of sera obtained from rabbits previously treated with injections of different strains of dysentery bacilli, seem to be of considerable interest. As is now generally known, the true Shiga dysentery bacilli and those fermenting mannite, although in some sera appearing to agree in their agglutination, yet in others differ almost absolutely. They had previously shown that among the group of the mannite-fermenting varieties there are a number of subgroups, each subgroup containing bacilli obtained from different sources which agree in agglutination characteristics and differ from the bacilli of every other subgroup. The various dysentery bacilli seem especially rich in affinities for such agglutinins as develop through various causes in many adult animals. It is these increased "normal" agglutinins which have caused so much confusion in grouping these bacilli. The blood of a young goat or rabbit which contains no appreciable agglutinin for any of the subgroups becomes, after a single infection with one variety, rich in agglutinin only, for the special bacillus introduced and for others of the same subgroup. Later, after repeated infections the so-called "normal" agglutinins develop, which affect, to a greater or less degree, all varieties of dysentery bacilli. If an animal is injected frequently during a long period of time with a single strain of bacilli, it frequently happens that other distinct varieties of dysentery bacilli are agglutinated in as high dilutions as the variety used for injecting the animals. To prove that such a serum in spite of appearances contained specific agglutinin for the variety inoculated, it was determined to follow the suggestion of Castellani, who separated the common from the specific agglutinins in mixed colon and typhoid infections. It was believed that if the serum from an animal which had been repeatedly injected with one variety of dysentery bacilli was saturated with some other variety the latter might remove all agglutinins for which it had affinity and leave the agglutinins specific for the former. This result was obtained, which permits the hope that in this way a serum truly specific in its agglutination reaction may be obtained for any of the varieties of bacteria comprising large general groups such as those to which the dysentery and colon bacilli belong. The technic was as follows: The surface of the slanted nutrient agar contained in six tubes was inoculated with a single type of dysentery bacilli and the culture allowed to grow for forty-eight hours. The bacilli were then washed off into 90 c.c. of a bouillon culture of twenty-four hours' growth of the same bacillus. To this emulsion was added 10 c.c. of the serum from the immunized rabbit, horse or goat. This 10 per cent. solution of the serum containing enormous quantities of the bacilli was then allowed to stand for twenty-four hours at 37° C. The mixture of serum and bacilli was then filtered through a small Berkefeld filter. The first 50 c.c. of the filtrate was thrown away, as a certain portion of any agglutinins which might be present is retained in the filter from the first portion of the filtrate. If the original serum did not agglutinate higher than 1 to 1,500 the above quantity of bacilli usually exhausted all the agglutinins which had any affinity for the bacilli. The tables showed that the dysentery bacilli used, when tested with exhausted sera, could be divided into three large groups and a number of individual varieties. In rabbit serum before the injections were commenced, there was no appreciable agglutinin for any of the varieties tested. After twelve injections of cultures of a bacillus of the mannite-fermenting type "Class B" agglutinins had developed for "Class B" so that a 1 to 600 dilution of the serum gave a complete agglutination, while for "Class A" of the mannite-fermenting type the agglutination took place in dilutions only up to one part to 200 and for the Shiga type no development of agglutinins occurred. When this "B" serum was saturated with either Shiga of "A" bacilli at least one-half of the aglutinin remained for "Class B" bacilli while all the agglutinin disappeared for the others. In the second experiment given the serum of a horse was used which through injections of both Shiga bacilli and mannite fermenting "Class A" bacilli had developed agglutinins for both these varieties so that dilutions of the serum up to 1-1,500 gave a positive reaction. For all other varieties agglutinins were present to a less extent. These group agglutinins acted in dilutions of about 1-600. Through the absorption of the agglutinins by either of the varieties of bacilli used in injecting the horse all the specific agglutinins for its own class were absorbed together with most of the agglutinins common to most varieties contained in the group of the dysentery bacilli; but the specific agglutinins for the other class largely remained. It will also be noticed that many varieties of bacteria not at all allied to the dysentery bacilli caused more or less absorption of these agglutinins. Others caused almost no absorption. The bacteria which removed agglutinins were all agglutinated in low dilutions by the serum used.

Dr. Ewing said that the examination of Dr. Park's results in the effort to separate the specific agglutinins of very closely related bacterial species, suggested that the absorption method might be employed in the separation of such closely related bloods as human and anthropoid monkey blood by precipitin serum. While he had succeeded with difficulty in identifying higher monkey from human blood by diluted serum, it would seem possible to distinguish more certainly between monkey and human blood or beef, sheep and goat bloods by the use of serum which had been saturated by one of the closely related bloods. After saturation of beef-rabbit serum with sheep blood, only specific precipitin for beef blood ought to remain and none for sheep, but very little would probably be left for either.

Some Observations on the Thread Reaction; its Occurrence in the Human Body.—Dr. E. Libman read a paper with this title. The writer described three forms of specific reactions; the agglutination reaction, the thread reaction; and the so-called "amorphous agglutination reaction." The last having been described by Schmidt during the past year was not discussed by the writer. He said that the subject of the thread reaction was first prominently brought forward by Pfaundler although it had previously been noted by other observers. Pfaundler investigated eight cases of local infection by colon bacilli in each of which he obtained a positive reaction with the serum of the case and the bacillus isolated from the patient in a dilution of at least one to one hundred, if the hanging drop preparations were observed at the end of twenty-four hours. In the febrile cases he obtained a thread reaction, in the other cases a clump reaction. The thread reactions presented the following appearances: The organisms were arranged in long interwoven threads, the latter being generally coiled in skeins. The spaces between the threads were clear and none of the bacilli were motile. Very few individual organisms or single groups of bacilli were found in the thread labyrinths. When observed with high powers the organisms in the threads were of a granular appearance and some were club-shaped. The bacteria could be shown to be alive. In most cases there was more or less agglutination at first. In Pfaundler's experiments he obtained positive reac-

tions only when the patient's blood was tested with the organism causing the infection. He claimed, therefore, that the reaction represented more than a specific reaction; namely, an individualistic one. In some unpublished experiments made by the speaker, in 1898, it was found that the thread reaction was frequently obtained in cases of appendicitis and peritonitis due to the colon bacillus. Only colon bacilli which were closely allied in cultural characters were used. Fever was present in all cases. The general results of the observations were that the thread reactions if they were complete in a dilution of one to twenty seemed to be specific and no interreaction between the various bacilli and a given serum could be demonstrated. The experiments were too few in number, however, to prove distinctly the absence of any interaction and in some cases of proteus infection such interactions were found. In some of the cases agglutination reactions only were present. In a paracolon case described by the speaker two years previous he found that the reaction of the serum with the bacillus always took the form of a thread reaction and that in that case the reaction was distinctly individualistic and assumed a general form resembling chains of streptococci. If agglutination reactions alone had been tested no specific reaction would have been found in this case. The same serum with the same organism no longer gave the thread reaction when transplanted for a number of days on artificial media. This seemed to indicate that the loss of the reaction was due to the change in the bacillus not to a loss of power of the serum. Flexner, Kruse, Duval and Vedder have noted the occurrence of the thread reactions in dysentery and have regarded it as of the same significance as the agglutination reaction. The speaker had found that he could distinguish two forms of thread reaction, one in which the bacilli grew out in long convoluted threads which generally retain their bacillary form. This could be called the end to end reaction and its specific nature is somewhat in doubt. In the other form of thread reaction the organisms assume a coccoid form and the chains resemble those of streptococci. This reaction, in the speaker's experience, when complete was usually specific and individualistic under certain conditions. The reactions are best obtained by making an emulsion in bouillon from a culture of the organism on agar. The suspension must be very dilute, just enough of the culture being used to cause a distinct cloudiness. Sugar bouillon cultures should never be used as in them bacilli of the colon group are apt to take on a coccoid form. In a case of carcinoma of the duodenum with obstruction of the common bile duct the thread reaction was found to occur in the gall-bladder during life. The contents of the bladder was clear fluid, without bile pigment, and contained a small amount of white granular matter. On examining this under the microscope convoluted chains that seemed to be streptococci were found. The sediment decolorized with the Gram stain and the culture made from the fluid gave an organism culturally and morphologically similar to the dysentery bacillus. The serum of the patient gave a chain reaction in a dilution of one to one thousand but no reactions with the colon, typhoid, or paracolon bacilli. The observations made in the case which he had described could not, Dr. Libman believed, be traced to purely accidental influences, nor did he believe they could be due to the icteric condition of the serum, for in the gall-bladder itself the fluid was perfectly clear and not bile stained, and in the second place the serum did not produce such changes in cultures of other closely related bacillary forms. The reaction, Dr. Libman thought, must be regarded as a specific one due to the inflammation of the gall-bladder by the bacillus in question. The observations recorded were of a certain degree of importance because they indicate that great care must be taken in making a diagnosis of streptococci in hanging drops; it must be remembered that one may be dealing with the coccoid forms of bacilli. Dr. Libman had found in a number of instances; in the urine, long chains of what appeared to be streptococci, but on careful examination had been found to be the coccoid forms of the colon bacilli or other bacilli. In these cases it was probable that the acidity of the urine had much to do with the development of the coccoid forms. The difficulty could be avoided, at least to a great extent, by the use of the Gram stain, because up to the present time the thread reaction had been particularly noted with organisms that react negatively to the Gram procedure. In applying the Gram stain on urinary sediments it was important to remember that with very acid urines organisms which are naturally Gram-positive can be very easily decolorized.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

Section on Clinical Medicine.

Stated Meeting, held April 1, 1904.

Discussion of Appendicitis.—The meeting was devoted to this topic, Dr. Hemmeter treating the medical side of the question. He first referred to the fact that the truth about appendicitis had been learned largely by American surgeons, and he quoted several very flattering foreign opinions of Reginald Fitz. Many fanciful explanations have been advanced to account for appendicitis, Van Cott suggesting that terminal arteries in the appendix may explain the origin of the disease and others explaining it by supposing nerve degenerations to occur. The simplest though probably not the entire etiology consists in the anatomical features of the organ, for we have here a small gut closed at one end. Many cases of appendicitis are catarrhal throughout, and these get well. The two forms which are not surgical at all are catarrhal appendicitis and appendicular colic, the latter being not an inflammation but a muscular effort to get rid of a foreign body. In these cases fever is not present, the swollen appendix can be palpated and the patients recover under medical treatment. In the ulcerated cases, the cases with abscess or obstruction, the fulminating or peracute cases, and the chronic cases treatment is essentially surgical. The Germans, however, aspirate the abscess cases for diagnostic purposes and the subsequent history of some of these, which did not come to operation, shows that abscess absorption is possible. Curiously enough, at the International Congress in Paris, Tuffier and the other surgeons advised conservative treatment in the early stages, while Potain and the clinicians advised surgical treatment. How should we treat a case of appendicitis medically? First, only that food should be given which is absorbed in the intestine, gives sufficient caloric value and does not reach the appendix. A jelly made with Rhine wine answers these demands, and it is particularly important to warn against the use of milk. Secondly, pain must be controlled, and it is best done by morphine in doses too small to destroy tenderness and in that way mask the symptoms. The advisability of rectal feeding is not altogether proven for antiperistalsis undoubtedly occurs, as can be proven experimentally. Fitz and Sahli advise the use of leeches and it is certain that ice-bags externally are of value.

Differential Diagnosis.—Dr. Winslow discussed this phase of the affection, starting from the thesis that appendicitis is in every case a surgical condition. When a patient previously in good health is taken with ab-

dominal pain—often following some indiscretion of diet—fever, vomiting, diarrhea or constipation, we think naturally of appendicitis and the conditions which simulate it. If the case is one of simple colic, temperature is absent, pulse is low, there is no rigidity, the pain is in the small intestines and is relieved by abdominal pressure. The symptoms in this case, so far from increasing, gradually diminish. In gall-stone colic the pain is higher up, the bladder may be palpable under anesthesia and jaundice is in many cases present. Intestinal perforation is often diagnosed from the symptoms previous to the acute attack, and in case of typhoid fever by the Widal reaction. In females the ovaries and tubes have always to be thought of, and in any case of peritonitis the probability is fairly strong that the appendix was the original source of trouble. Enteroptosis is sometimes a confusing condition. Surgical treatment should be instituted immediately, but Ochsner's method may be of value in the late early and in the early late cases.

Pathology of Appendicitis.—Dr. Hirsch discussed the pathology of appendicitis, referring first to anatomical considerations. The appendix appears about the tenth week of fetal life and is in all probability due to retarded development. It is usually situated behind the cecum pointing toward the spleen and the failure of its artery to run as far as its tip may have clinical importance. The predisposing causes to its inflammation are its structure, its short mesentery and possibly the rheumatic diathesis. The exciting causes are foreign bodies and microorganisms. Pins, worms and concretions having been found in about seven per cent. of 14,000 cases analyzed by Mitchell. The colon bacillus, the pyogenic cocci, tubercle bacillus and the actinomyces are the organisms most often found. Pathologically there is only one form of appendicitis, the acute infective type, but the cystic, the parietal, the gangrenous and the perforative form may be distinguished clinically.

Immediate Surgical Intervention.—Dr. Blake favored this mode of procedure when the diagnosis was made, but the difficulty of the diagnosis was illustrated by a case of his who died of multiple liver abscess following appendicitis, her case having been thought to be typhoid fever, tuberculous peritonitis or actinomycosis of the liver.

Dr. Atkinson referred to the value of the leucocyte count in making the diagnosis early, though he admitted that in many cases it was of no help whatever. He also referred to the confusion in diagnosis which may be caused by perinephric abscess and by retroperitoneal glands.

Dr. Watson said that in his experience as a general practitioner he had found it wise to refer cases of appendicitis to a surgeon immediately, and his general rule was always to send his cases when there was increase of any symptom, whether pulse or pain or what not. He had never had any cases operated on too early, but he had several operated on too late. One patient of his was seen in the evening with suspicious but not marked symptoms. He decided to watch the case till morning. She passed an exceedingly good night, sleeping naturally and without pain and was quite comfortable next morning. Her pulse, however, had risen slightly and on that indication she was referred to the surgeons who found an appendix in very bad condition.

Loving Cup for Dr. W. T. Bull.—Dr. William T. Bull severed his connection with the College of Physicians and Surgeons Wednesday, and as a sign of their regard the classes of 1904 and 1905 presented to him a silver loving cup, suitably engraved.

BOOK REVIEWS.

The International Medical Annual. A Year-book of Treatment and Practitioner's Index. 1904. Twenty-second Year. E. B. Treat & Co., New York.

The International Medical Annual is always an excellent review of the past year's medical literature. Its contributors are mainly distinguished English medical men and it is well known how conscientiously they do their work. One of the features of the present year is the introduction of stereoscopic views of pathological specimens. These give an excellent idea of the shape and form of specimens and of the localization of lesions. A little instrument is provided for the examination of the views and there is no doubt that it adds greatly to the solution of the difficult problem of the illustration of pathological conditions. There are some excellent plates in illustration of typical stages of certain of the exanthemata.

As is usually the case, the volume is largely devoted to treatment. Among the reviews of recent literature that seem especially practical are those of diabetes and of drug poisoning. The subject of anesthesia, too, has a very full review, and the recent literature of kidney affections has received the notice that its extensive list deserves.

Infant Feeding in Its Relation to Health and Disease. By Louis Fischer, M.D., Visiting Physician to the Willard Parker and Riverside Hospitals, New York City, etc. Containing 54 Illustrations with 24 Charts and Tables, mostly Original. Third Edition. F. A. Davis Company, Philadelphia.

This excellent book seemed perfect before and yet the author has found means of improving it. In this new edition very considerable changes have been made, some of the old matter being omitted and several new chapters added.

One of the most timely of the additions is a chapter on "Buttermilk Feeding," which has lately been attracting much attention abroad. The food is prepared by adding flour and sugar and boiling; it has many advantages over other forms of artificial food owing largely to the strong bactericidal powers possessed by buttermilk. Another valuable addition is the chapter "Milk Idiosyncrasies in Children," in which the trying cases of children who will not tolerate milk are discussed. A chapter on feeding children with cleft palate has also been added.

The problem of adapting artificial foods to the individual needs of infants is becoming so vital that no practitioner can afford to neglect this rather difficult branch of treatment. Every one, experienced or tyro, will derive the greatest assistance from this book, which is surpassed by none in practicality, convenience of reference and authoritativeness.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

La Rhinoplastie. By Drs. C. H. Nelaton and Ombredanne. 8vo, 438 pages. Illustrated. G. Steinheil, Paris.

Diseases of the Intestines. By Dr. M. Einhorn. Second edition. 397 pages. Illustrated. Wm. Wood & Co., New York.

Commoner Diseases of the Eye. By Drs. C. A. Wood and T. A. Woodruff. 8vo, 500 pages. G. P. Englehard & Co., Chicago.

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ORIGINAL ARTICLES.

INTRASPINAL INJECTION OF LYSOL SOLUTION IN THE TREATMENT OF CEREBROSPINAL MENINGITIS, WITH A REPORT OF THREE CASES.*

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OF NEW YORK;

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THE report of any method of treatment which is based upon only three cases must necessarily be received with a certain amount of reserve; yet, in a disease with so high a mortality rate as cerebrospinal meningitis, the results in these three cases are so striking that I may be pardoned for publishing this method even after so limited an experience.

In this disease the determination of the prognosis in each individual case is exceedingly difficult, in spite of the fact that the mortality rate is so high. The gloominess of the prognosis is due to the poverty of our therapeutic resources. The perusal of the various monographs on the subject shows how very limited is the sphere of our therapeutic agents. How little advance has been made up to recent times is well shown in the article on this subject in Leyden and Goldscheider's classical treatise "Diseases of the Spinal Cord and Medulla."† Councilman, Mallory and Wright, in their report on this disease published in 1898, even after the introduction of lumbar puncture, give an equally discouraging picture. Eichhorst's monograph, written in 1902,‡ the most recent publication on the subject is equally pessimistic.

So far as we have been able to learn from a review of the literature, methods of treatment have but little influence on the mortality, which, for the epidemic form, is estimated from 20 to 75 per cent. While the sporadic form is not so fatal, yet the mortality of all the cases of cerebrospinal meningitis, (including all varieties of bacteriological origin, the meningococcus being present in most cases) is often over 50 per cent. Among the recent methods of treatment may be mentioned prolonged hot baths at 104° F., from the use of which a number of cases of cure have been reported. The results of laminectomy and washing the spinal canal, as done by Osler and others have not been encouraging. The only real advance in therapeutics is the lumbar puncture, performed once or repeated a number of times during the course of the disease, but this alone has cured only a limited number of cases.

We are indebted to Seager for the publication of a new method of treatment, the results of which are most encouraging. His experience is based upon his observations in a series of cases of the epidemic form at Lisbon.*

This treatment consists of lumbar puncture and the withdrawal by aspiration of varying quantities of cerebrospinal fluid from the spinal canal, frequently amounting to 50 c.c. "Artificial serum is then injected with the same syringe, the needle being left *in situ*, and the surrounding parts are washed with serum; lastly, a quantity (from 9 to 12 c.c.) of a one per cent. solution of lysol is injected through the same instrument and the needle withdrawn. The temperature falls immediately, but rises again after one to three days, when the puncture and injections are repeated, and so on until only quite clear and limpid fluid is withdrawn after puncture, when the injection of lysol is stopped. Afterward a few punctures are made to see if the fluid continues clear." Seager calls attention to the painfulness of the treatment, which, however, my own experience in the three cases treated does not corroborate (see addendum).

Of the 31 cases in Lisbon which were treated with lysol, 13 died—5 from dilatation of the cerebral ventricles, 2 from pulmonary tuberculosis, 1 from edema of the glottis, 1 from purulent pneumonia and 4 from the disease without complications. The 18 that recovered were *completely* cured.

The early plan of treatment in this same epidemic was by hot bath and ice-bag to the head. Under this régime 60 per cent. died Then simple lumbar puncture of the spinal canal was tried in 20 cases, in 3 of which the fluid was already purulent. Of these 20 patients 9 died, and of the 11 who recovered, 1 was deaf, 1 had persistent paralysis of the left arm and 4 had bed sores. The next 7 cases were treated with puncture, removal of the fluid and an injection of oxycyanide of mercury. Of these 7 cases 4 died and 3 were cured. The fluid was purulent in 5 of these cases, 4 of which proved fatal.

The number of cases treated by lysol could have been increased had Seager included 20 cases which were under treatment at the time of his report, but inasmuch as the duration of this disease is often long, he did not include those under treatment, although he states that the majority of them were in such good condition that their recovery seemed assured, hence the results of the treatment are even better than 57 per cent. of complete recoveries in the 31 cases noted above. The presence of the meningococcus was the only characteristic bacteriological finding in the cases.

Of the three cases which I report the first was a meningococcus infection and the second a viru-

*Read before the Section on General Medicine, New York Academy of Medicine, March 15, 1904.

† Nothnagel's Specielle Pathologie und Therapie, 1897, X. Band.

‡ Deutsche Klinik, II. Band, S. 321 et seq.

* Lancet, November 1, 1902.—Seager does not state who first introduced this plan of treatment, but simply reports his observations at the Special Hospital at Lisbon.

lent streptococcus. While it must remain an open question whether the meningococcus case would have recovered without this treatment, since the sporadic cases in adults not infrequently do so, yet the fact remains that the patient was losing ground steadily in spite of the various treatments, including lumbar punctures, which were employed. After the first injection he seemed to hold his own, while following the second his recovery was rapid and uneventful.

Of the second case I can speak with much more assurance, since, at the Mount Sinai Hospital, death has resulted in every case of cerebrospinal meningitis in which the streptococcus was found in the fluid obtained by lumbar puncture. The condition of the child at the time of the first lysol injection was so desperate that no one who saw the case expected him to survive the night, hence his complete recovery without any after-effects is all the more gratifying. It is to be noted that the washing out of the spinal canal with artificial serum was omitted in all of these patients. The injections were all made without anesthesia, except the first one in the child, which was done under slight chloroform narcosis. No pain was complained of and no unpleasant after-effects were noted.

At the present writing all of the patients are perfectly well. The details of the histories, for which I am indebted to Doctors Oppenheimer and Ziegel, of the House Staff, are as follows:

Case I.—J. R., thirty-three years of age, Austrian, tailor, admitted to the Mount Sinai Hospital January 30, 1904. Family and previous history negative in all respects except an uncomplicated attack of measles as a child. Present illness began abruptly six weeks before admission with chill, headache, general bodily pains and fever. The headache, fever and prostration continued for about two weeks when the patient was able to be up. He then had another chill and the headache returned. Stiffness of the neck was complained of and he has since been in bed. He has been vomiting for the past four days, three or four times daily, not projectile. Slight cough and mucopurulent expectoration. Constipation has been a prominent symptom throughout. Urination is very painful and the total quantity is diminished. No herpes. Considerable loss of flesh and strength. Severe headache has prevented sleep, but the mental condition has been soporose.

The main points in the physical examination are as follows: Patient lying on the side with extremities and body flexed, but the head somewhat extended. Considerable rigidity of the neck. Tenderness on percussion of the skull. Some photophobia, pupils markedly contracted, equal, react to light and accommodation; no strabismus. No facial paresis. Ears negative. Tongue is very dry. Marked *tâche cérébrale*. A few small, faint roseolæ on the abdomen. No general hyperesthesia. Abdomen retracted and tender on deep palpation. Tendon reflex somewhat diminished. Kernig's symptom somewhat marked but neither McEwen's nor Babinski's sign. Otherwise the physical examination was negative. Rectal temperature on admission 100.4° F.; pulse 46; respiration 18. *Urine:* Sp. gr., 1.020, total quantity 37 ounces. Faint trace of albumin, no sugar, 2.5 per cent. urea, a few hyaline casts and blood cells. Negative Diazo. White cells 23,000. Negative Widal.

The following day temperature rose to 101° F. in the evening. Pulse ranged between 54 and 66; respiration 18 to 20. Two counts of white cells showed 14,000 in one, 15,000 in the other.

February 1.—Since admission patient has continued to have severe headache with marked tenderness on percussion of the left side of the head. No vomiting since admission. Blood culture by Dr. Libman negative. Patient is mentally clear, but has a dull, apathetic expression. Rigidity of the neck marked. Still very much constipated, cathartics ineffectual. The left knee-jerk more active than the right.

February 2.—Temperature almost normal. Pulse ranged between 50 and 80; respiration 20 to 26. Lumbar puncture yielded 6 c.c. of somewhat turbid fluid which was obtained drop by drop (no pressure). Following lumbar puncture there was no increase of headache. Examination of the eyes by Dr. Gruening was absolutely negative.

February 3.—A few moist râles at the right apex. Two examinations of the sputum yielded no tubercle bacilli.

February 4.—Patient has improved somewhat; slight headache. Slept well. Rigidity of the neck the same. The tâche and the Kernig are still well marked.

February 6.—Recurrence of headache which is now more severe and general—worse on the left side. Tongue very dry and deviates to the left. No facial paresis. Pulse 66 to 68. Second lumbar puncture yielded 3 c.c. of turbid fluid the same as that obtained at the first tapping. Dr. Libman reports that meningococci are present in both specimens; polynuclear cells predominate. Percentage of albumin markedly increased; no reduction of Fehling's solution.

February 7.—The patient complained of severe headache immediately after lumbar puncture; but on the following day he complained much less of it.

February 10.—Yesterday afternoon after seeing visitors patient became stuporous and later almost comatose, with involuntary urination and defecation. Pulse 48 this morning. Takes nourishment with difficulty. Too weak to move in bed. Was given a hot bath at 104° F.

February 12.—Mental condition about the same—very apathetic. Feeding is difficult. Rigidity of the neck is undiminished. Tâche still present; knee-jerks absent. Kernig still present, but less marked. No Babinski or McEwen. Pupils equal, although yesterday the right was larger than the left. No paresis. Fundi negative. Hearing in both sides normal.

February 13.—General condition somewhat worse than on the preceding day and the patient lying on his side curled up in bed with rigid extended neck, almost comatose, in decidedly worse condition than at any time in spite of all treatment, which included prolonged hot baths at 104° F., iodides, ergot, etc. Having decided to use the lysol injection, a lumbar puncture was made and 12½ c.c. of slightly turbid fluid were withdrawn by means of aspirating syringe attached to canula; 9.5 c.c. of sterile one per cent. lysol solution were injected through the canula into the spinal canal, nine minutes being required for the injection. During and immediately after the injection patient was comfortable and no untoward symptoms followed the injection.

February 14.—Patient is just as apathetic as before but does not complain of headache. Pupils are very unequal, the left being larger than the right, but they react to light and accommodation. The pulse is normal but the respiration is slow and somewhat irregular. No knee-jerk obtainable. Rigidity of the neck about the same. Tâche less marked; hypotonia of the muscles.

February 15.—He is decidedly better. Much less apathetic; slight headache only. Rigidity of the neck slightly diminished. Knee-jerks still absent; Kernig and tâche still present. Patient takes nourishment better; has no difficulty in swallowing. He looks brighter.

February 16.—Lumbar puncture attempted, no fluid obtained, but as the needle seemed to be in the spinal canal 10 c.c. of one per cent. lysol solution were slowly injected.

February 17.—Patient improving; no headache. Takes nourishment and sits up. Other signs same as noted. Knee-jerk still absent.

February 18.—Improvement continues. Out of bed. Can now touch chin to sternum.

February 21.—Walks about the ward. No symptoms complained of. No rigidity of the neck. Left pupil still larger than the right. Slight tâche appears very slowly. Knee-jerk obtainable on the left side, not on the right. Kernig's sign still fairly well marked. Pulse 88 to 92; respiration 20. Temperature normal, as it has been practically since February 8.

February 23.—Patient apparently well. Knee-jerks returned. No rigidity of the neck. Pupils equal.

February 26.—Patient discharged cured.

Case II.—Walter A., born in the United States, ten years of age, admitted February 23, 1904, to Mount Sinai Hospital, service of Dr. Sachs, to whose courtesy I am indebted for the privilege of reporting this case. The previous history of this patient will be found in Dr. Gruening's article in the Jacobi Festschrift (1900) entitled "A Case of Otitic Brain Abscess in a Boy Five Years of Age." This history in brief includes an attack of otitis, mastoiditis and brain abscess five years ago for which he was operated upon by Dr. Gruening. The pus from the brain abscess showed streptococci. The boy was discharged cured five weeks after the operation. During the past five years the patient has been absolutely well with the exception of an attack of measles two years ago. There has been no discharge from the ear. The boy was very bright mentally and there were evidently no sequelæ to his otitic brain abscess except loss of hearing on the right side.

Present Illness.—Four days before admission there was a sudden discharge of a large quantity of clear watery fluid from the right ear. Up to to-day there has been no pain, fever or constitutional disturbance. At 4 A.M. to-day there was again a profuse serous discharge from the right ear, the patient complaining of agonizing headache and bursting pain in the right ear. Temperature 104° F. He had a slight convulsion and vomited four or five times. Since this morning he has been stuporous with occasional attacks of restlessness. He is unable to urinate voluntarily.

Examination on Admission, February 23, 1904.—Patient semi-comatose, aroused with difficulty, unable to answer questions or recognize his surroundings. Lies fully flexed with retracted head and rigid neck. Photophobia; some injection of the conjunctivæ. Pupils are equal, moderately dilated and react normally. Left ear is negative. Right ear shows scar of previous operation in right mastoid region; there is tenderness. Profuse serous discharge from the right ear. Tongue moist and coated. Throat negative. Slight glandular enlargement in the anterior cervical and inguinal regions. No McEwen's sign; no *tâche cérébrale*. The respirations are very shallow, rapid (60) and irregular. Heart and lungs negative. Abdomen retracted, generally tympanitic. Liver and spleen negative. Knee-jerks diminished but present. Kernig's symptom present. No Babinski; no clonus. On admission temperature 105° F., pulse 104, respiration 60. White blood cells 22,400.

He was seen by Drs. Gruening and Sachs, the latter advising lumbar puncture, which was immediately performed by Dr. Lilienthal; 10 c.c. of very cloudy cerebrospinal fluid were withdrawn, the fluid being apparently under pressure.

Dr. Libman reports as follows: On standing three-eighths inch purulent deposit. *Cytology.*—Nearly all the cells are polynuclear. Streptococci found in pure culture in spreads and cultures. Albumin markedly increased; no sugar reaction. There was no apparent change in the patient's condition after puncture.

At this time, having been asked to see the case by Dr. R. Abrahams and Dr. Gruening, I advised the use of the lysol injection. Four hours after the first lumbar puncture the second lumbar puncture was made, 9 c.c. of purulent fluid being withdrawn. Dr. Libman's report on this was the same as that on the first, with the exception that the fluid was more cloudy and contained more streptococci. Following the withdrawal of the fluid, 6 c.c. of sterile one per cent. lysol solution were slowly injected through the canula of the lumbar puncture needle.

The patient's condition at the time of the in-

jection may best be inferred from the fact that none of us expected to see him alive on the following morning. During the night, the child, who had previously been stuporous, became very restless and had three general convulsions each lasting a few minutes. Digitalis and bromides were given, also nutritive enemata, since he was unable to take nourishment. On the following morning the temperature dropped to 101° F. He was able to urinate voluntarily.

February 24.—The patient is somewhat improved. Mental condition is soporose with intervals of restlessness. Pupils are equal and contracted. Knee-jerks not obtainable. Kernig's sign is present; no McEwen or Babinski. *Tâche cérébrale* now present. Patient must be catheterized every six hours. Urine, sp. gr. 1.010, trace of albumin; no sugar. Temperature 101° F. Pulse 108, fair quality. Respiration 52, shallow and irregular. Defecation involuntary. The discharge of serous fluid from the ear continues. Examination of the ear by Dr. Gruening shows the presence of a pedunculated mass covered with skin which almost completely occludes the external auditory canal and prevents inspection of the deeper parts. Four P.M. Lumbar puncture. Five c.c. of turbid fluid withdrawn. Dr. Libman's report the same as yesterday except that the streptococci grow much more slowly. A second lysol injection of 8 c.c. of a sterile one per cent. solution was given after the withdrawal of the fluid.

February 25.—Decided improvement in the patient's condition. Nourishment is being taken by mouth. The boy talks at times, though somewhat irrationally; is irritable on being disturbed. Meningeal signs are still present though less marked than yesterday. Temperature 101° to 102° F. Pulse 94, fair quality, slightly irregular. Respiration 30. Involuntary defecation still continues. Urine must still be withdrawn by catheter. Treatment: 2 grains of urotropin b.i.d., sodium bromide 3 grains q. 3 h., fl. ext. digitalis 1 m. t.i.d. Discharge from the ear continues free. Examination of the right fundus shows sharp outline of the disk with veins apparently congested.

February 26.—Improvement continues; patient is perfectly conscious and talks rationally. Complains of diplopia; no objective eye symptoms. No paresis of face or extremities. Knee-jerks have returned; Kernig's sign still present. No tâche. Takes considerable nourishment. Temperature 100.2° F.; pulse 100; respiration 30. Urination is now voluntary. Discharge from the ear as before.

February 27.—Recurrence of headache and stuporous mental condition. Lumbar puncture was repeated, 16 c.c. of clear fluid being obtained. No lysol was injected because the fluid was clear. Dr. Libman reports no bacteria in the smear; no growth in the culture. Culture of discharge from the ear shows numerous streptococci.

February 29.—Though the temperature still ranges from 101° to 103° F. the patient's general condition continues to improve. He is perfectly rational, takes plenty of nourishment, defecates and urinates voluntarily. The only meningeal symptoms which persist are moderate rigidity of the neck and Kernig's sign. Discharge from the ear continues. Culture from the urine shows no streptococci.

March 1.—Temperature 100° to 101° F. Pulse is now regular; respiration no longer rapid, shallow or irregular. Knee-jerks are obtained; Kernig's sign persists, also some rigidity of the neck.

March 2.—Discharge has ceased. Temperature, respiration and pulse normal. Patient looks and acts like a perfectly healthy boy.

March 6.—Out of bed. Perfectly well.

For the details of the *third case* I am indebted to Dr. Seff, of the House Staff of Mount Sinai Hospital. While on his vacation visit to his home in Northumberland, Pa., he was asked by Dr. C. Rutter to see a very severe case of cerebrospinal meningitis. The patient was a boy, six years old, who had had no illness except measles, some years ago. Family history non-tuberculous. An older sister had just recovered from an attack of cerobrospinal meningitis of four weeks' duration.

On March 3, 1904, he became restless and irritable. *March 4.*—At 4 P.M. had severe chill, followed by fever (103.2° F., mouth), pulse 114, respiration 36. Soon the child became stuporus, and rigidity gradually developed. Vomiting was frequent. Examination was negative, excepting the absence of tendon reflexes. During the night, opisthotonos developed. This condition of marked irritability on arousing him, moderate fever, rapid and irregular respirations, pulse about 100, opisthotonos, etc., persisted, and this was the condition when Dr. Seff saw him on March 7. A distressing feature, in addition, was a very marked tympanitic distention of the abdomen. The entire body was covered with a fine papular, vesicular rash. Dr. Seff, knowing the good results in the two cases reported above, advised lumbar puncture and lysol injections. At 11 P.M. 5 c.c. purulent cerebrospinal fluid were withdrawn and 4 c.c. of a one per cent. sterile lysol solution were injected. Almost immediately there was a very abundant discharge of flatus with relief of the abdominal distention, although high enemata of various kinds had failed to relieve it. The night was uneventful; but on the following morning (March 8) the stupor was not so profound, the pulse was of better quality (104), respirations regular, fever 101° F.; the child seemed better in every way and the opisthotonos had disappeared.

March 9.—Child absolutely rational; reflexes have returned; some rigidity still present. Takes food readily.

March 12.—Child is practically well; is on soft diet. Unfortunately no cultures could be made, as Dr. Seff was unprepared for any such emergency.

In conclusion, I would state that I present the

results of these three cases with all the reserve which must necessarily be associated with so limited an experience. Only a more extended trial will enable us to determine whether equally satisfactory results will be obtained in a larger number of cases. It is to be noted that these observations corroborate the results obtained at Lisbon; they are far better than any results which have followed the varied plans of treatment in the severer cases at Mount Sinai Hospital. Furthermore, the treatment is harmless and involves as little risk as does lumbar puncture.

ADDENDUM.—Since the above was read on March 15, 1904, through the courtesy of Dr. B. Oppenheimer, House Surgeon at Mt. Sinai Hospital, I have received a copy of the original Portuguese monograph by Carlos França, "Meningite cerebro-espinhal epidemica," Lisbon, 1903. This essay, which is a very elaborate report on 103 cases of the disease observed in Lisbon, was unfortunately received too late to permit any extended reference while correcting proof sheets, but will be discussed elsewhere. Suffice it to say that as the result of his experience with the very fatal epidemic at Lisbon, França is very hopeful as to the results of the lysol treatment. He is emphatic in asserting that in many cases lumbar puncture alone will not cure severe cases.

The washing of the canal with artificial serum (normal saline solution) was used only in a few cases where the cerebrospinal fluid was very tenacious. This procedure is improperly described by Seager. This method consists in inserting a second canula between the twelfth dorsal and first lumbar vertebræ and injecting the artificial serum with a syringe through the upper canula and allowing it to escape through the lower; this being done until the fluid contains only a few flocculi.

The quantity of lysol solution injected is 3 to 9 c.c. for children and 12 to 15 c.c. for adults. The injections are made daily till the fluid is clear. If there is much hyperesthesia, or if the patient is very rigid, a short chloroform narcosis is advisable.

My subsequent experiences with the lysol treatment will be detailed later. Suffice it to say here that the results thus far obtained more than justify its employment in the severer cases.

Glycogen Reaction of Leucocytes in Tuberculosis.—G. SCHRÖDER (Münch. med. Woch., March 15, 1904) draws attention to the fact that the presence of pyogenic organisms in the sputum of tuberculous patients does not necessarily mean that these germs participate in the process, as they may also occur as harmless saprophytes. Since fresh blood-specimens when treated with a solution of iodine and potassium iodide in gum arabic will give evidence of granules of glycogen in the leucocytes in cases of sepsis and suppuration, it seemed proper to test the blood of consumptives in the same way in the hope of disclosing secondary infection. Twenty-two cases of advanced tuberculosis were tested, but a faintly positive reaction was obtained in only two where true abscesses were present. The intracellular glycogen reaction is thus of no value in tuberculosis.

A CASE OF CARCINOMA OF RETAINED TESTIS.*

BY SINCLAIR TOUSEY, A.M., M.D.,
OF NEW YORK.

THE case which I am about to report was referred to me by Drs. Douglas H. Stewart and Robert Coleman Kemp, and was also seen by Dr. Ferd. Valentine and Dr. T. M. Townsend. It is one of carcinoma of a retained testis, forming a tumor occupying a large part of the abdomen; removal by laparotomy, rapid recovery; evidences of recurrence within two months, and death in about six months; the autopsy showing a carcinomatous mass extending from the third lumbar vertebra to the level of the second rib, and including the aorta and vena cava.

The patient, F. M. F., a musician, was a man, thirty-three years old, with both tuberculosis and cancer in his family history. He was born with a number of malformations, which were attributed to maternal impressions. Among these were claw-like deformities of the hands and feet, some of the phalanges being absent. Both testes were completely within the abdominal cavity and neither could be felt. There was an inguinal hernia; and an exaggerated hypospadias with apparent absence of the penis. The penis was buried in a sulcus which appeared like a vulva, the glans pointing back toward the anus. There was practically no corpus spongiosum, and the whole external genital region was almost as smooth as the palm of the hand, with the urethra hardly to be discovered.

Dr. Stewart operated for this condition in March, 1887, and manufactured a penis of very presentable appearance, and the patient assured us that satisfactory intercourse was accomplished whenever he so desired. This newly formed penis contained no urethra. The operation consisted in dissecting out the penis and doing some plastic work and skin-grafting, and was remarkably successful.

In January, 1899, the patient began to have fainting spells, with pain in the lumbar region; and in 1900 convulsions at night, occurring after physical overwork or exposure. In April, 1902, there was an attack of intense pain in the small of the back which was supposed to be of a rheumatic, neuralgic or tuberculous origin and which continued up to March, 1903, when Dr. Stewart was called to see the patient for the first time in a number of years. The condition then found was one of enormous swelling of the colon, forming a genuine enteroptosis. The patient was referred to Dr. Robert Coleman Kemp, at St. Bartholomew's Clinic. Dr. Kemp applied a Rose's belt, which in forty-eight hours, reduced the swelling to such an extent that the tumor could be felt, and the case was then placed in my hands.

At the time that this patient came to me he was moderately emaciated and presented a tumor occupying the entire lower portion of the abdomen from two inches above the umbilicus. This

* Report read and specimens and photos shown at a meeting of the Genito-urinary Section of the Academy of Medicine, January 20, 1904.

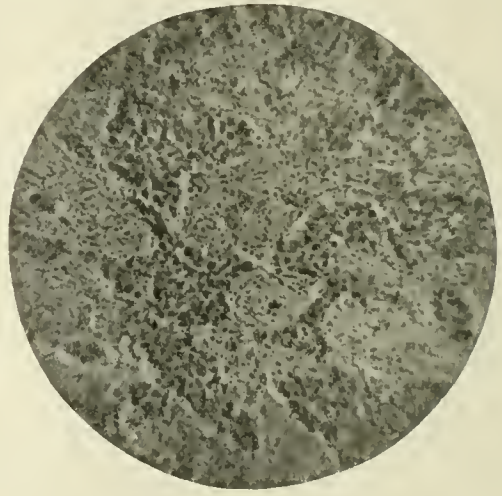
felt softer and cystic on the right side. A fluoroscopic X-ray examination was made, but did not assist in the diagnosis, which was that of tumor of retained testis. We were unable to determine before the operation whether it was of the right or left testis or of both. There was also a right inguinal hernia with considerable thinning of the tissues over it by the prolonged pressure of a truss. Neither testis could be found in the scrotum, groin, or abdomen, and the supposition was that one of them formed the tumor which nearly filled the abdomen. There was very severe pain in the region of the second lumbar vertebra, which made it very difficult for him to lie down at all.

On March 27, 1903, I operated at St. Mark's Hospital, ether being the anesthetic used. An incision was made in the median line from a little above the umbilicus to the pubes, and through this large incision nothing but tumor could be seen or felt. There were a few feathery adhesions between the tumor and the anterior abdominal wall, and on breaking these up it became evident that the tumor was retroperitoneal with a broad base about nine inches in diameter, and that its anterior surface, in contact with the anterior abdominal wall, consisted of the posterior peritoneal coat of the abdomen, which had been gradually lifted forward as the tumor developed behind it.

At first, the appearance of the tumor was that of a fibroid uterus, but later, as the peritoneal investment was cut away at the circumference and the growth was separated from the anterior abdominal wall, a portion of it was found to be a cyst, through the transparent wall of which could be seen about two pints of a clear yellow liquid. The location of this cyst and the appearance of its contents were so peculiar as to elicit a word of caution from one of the surgeons present in the form of the question "Where is his bladder?" A digital prolongation from this cyst extended down into the hernial sac. The cyst and the solid portion of the tumor were inseparably connected, and the entire mass was removed without rupturing the sac. This required only blunt dissection posteriorly, and the only large vessels encountered formed a broad band entering the peritoneal coat from above. The solid portion of the tumor, which I show here, weighed about four pounds, and on microscopical examination proved to be carcinoma with a considerable amount of soft fibrous tissue. None of the normal structure of the testis could be distinguished microscopically.

The patient made a rapid recovery, but in a couple of months a mass could be felt in the upper part of the abdomen a little to the right of the middle line. This at first gave him no trouble and he spent a few months as the musician at a summer hotel. The pain in the back returned, however, and finally became so severe as to cause him to return to the city, where he died on September 11, 1903, about five and a half months after the operation.

At the autopsy the body was found in a frightful state of decomposition, and the microscopical examination of the various portions removed proved valueless. The gross pathology was in part the presence of a carcinomatous mass beginning in the lumbar vertebræ, which were softened and eroded, and surrounding the great vessels to the level of the second rib. The mass was as large as a man's arm, and is shown herewith. The left testis was found in the lower part of the abdomen and was cystic and about the size of a lemon. The prostate was present as a single small middle lobe. No vagina or uterus was found. The spleen was nodular, the liver normal. There was a metastasis, three by two inches in size at the attachment of the diaphragm to the right ribs. The left kidney and ureter were incorporated in the cancerous mass. The right kidney and the portal vessels seem to have escaped. The entire mass was firmly adherent to the spine. The direct cause of death seemed to be an occlusion of the abdominal aorta caused by the pressure of the growth.



Microphotograph of the solid portion of the original growth.

In May, 1903, about two months after the removal of the tumor, the patient was examined by Dr. Ferd. C. Valentine with reference to the genito-urinary conditions and the examination of the urine at that time would have indicated a diagnosis of oxaluria with mild catarrhal pyelonephritis.

103 West Seventy-sixth Street.

Tubercle Bacilli in Milk.—In order to determine the temperature which will kill off tubercle bacilli in milk, W. Rullmann (Münch. med. Woch., March 22, 1904) added highly virulent sputum to different samples and then subjected them to various degrees of heat. After sterilization, a certain amount was injected into guinea-pigs and an autopsy held several weeks later. All animals were found infected unless the milk was heated up to 68° C. for one hour with constant agitation. If rapidly cooled this milk will not suffer in taste, nor is the albumin, lecithin or enzyme in any way altered.

THE MODIFICATION OF MATTOLI IN THE OPERATION OF VON HACKER FOR GASTRO-ENTEROSTOMY.

BY CARLO SAVINI, M.D.,
OF NEW YORK;
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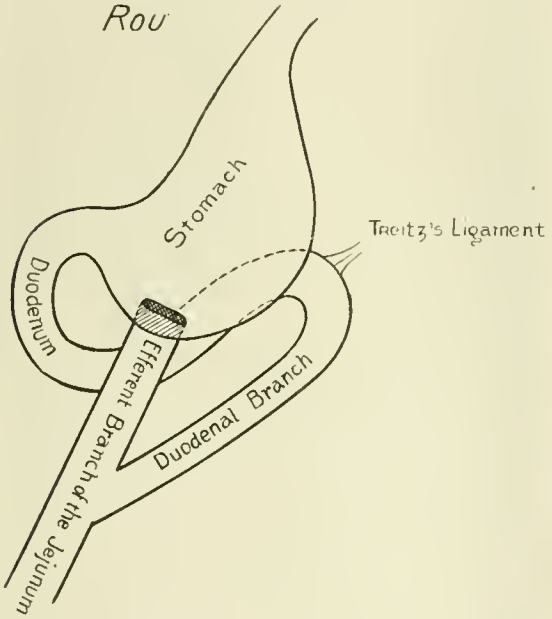
MANY have been the efforts in gastro-enterostomy to obtain with less difficulty and danger the same results as those given by the operation of Roux. The modifications of Chaput and Doyen-Gallet belong to this class, but they are either incomplete or difficult to perform.

Mattoli of Rome has suggested a method which has appealed to my mind as being the most simple and complete and which is worthy of a more general notice than has thus far been accorded to it.

Roux's operation consists mainly in cutting through the jejunum and the mesentery about ten inches below the Treitz ligament, in attaching the

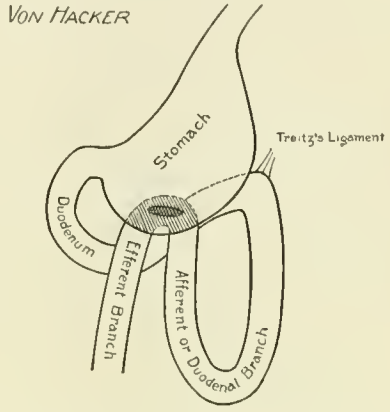
Fig. 1.



terminal or efferent portion of the intestine to the posterior wall of the stomach and in uniting the afferent or duodenal section to the intestine a little below the gastro-entero-anastomosis. A large opening between the stomach and the intestines and a free flow of bile and pancreatic fluid into the jejunum is in this manner secured. Post operation vomiting done away with and the possibility of *circulus vitiosus* avoided, it may be affirmed that this operation procures ideal results, regarded from the standpoint of a restoration of the physiological conditions governing perfect nutrition.

But Roux's method presents technical and other difficulties not to be overlooked. As the use of the Murphy button has many times proved to be unsatisfactory, two terminolateral anastomoses are lengthy and difficult if made with sutures. Once the first step in dividing the jejunum is accomplished the operation must be followed to the end, regardless of the patient's condition, and the surgeon is forced to make two anastomoses, in other words, to perform two operations. The danger of infection resulting from the opening of the intestines is also to be considered.

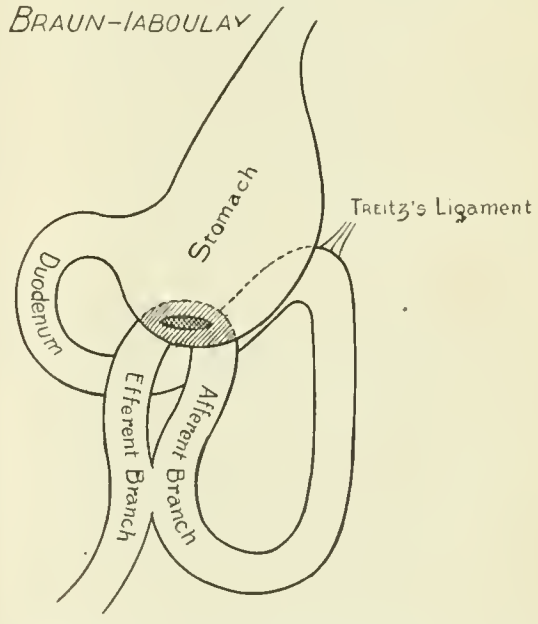
Fig. 2.



The foregoing are some of the reasons why an operation producing such perfect functional results is not more generally performed.

Von Hacker's (gastro-enterostomy posterior transmesocolic) is more simple and more speedy, and when well done is an operation procuring in most cases excellent results, though the possibility of the forming of a spur or valve closing the efferent portion of the intestine and the vomiting of bilious matter and food, often necessitates a secondary operation. In the Von Hacker operation the possible occurrence of a *circulus vitiosus* presents a very serious complication.

Fig. 3.



The Braun-Jaboulay modification, or the an-

astomosis between the two branches of the intestines corrects most of these disadvantages. But even when thus modified von Hacker's operation is inferior to Roux's.

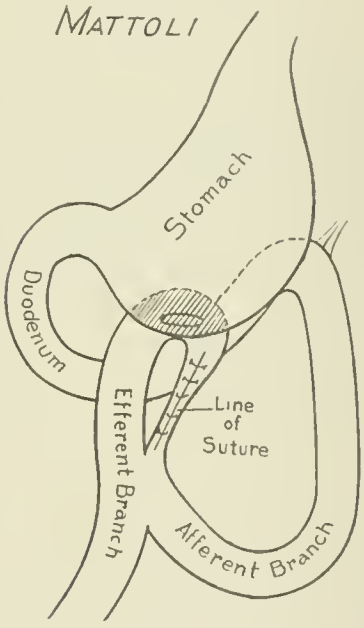
Mattoli's modification consists in transforming the modified von Hacker into an operation offering the practical advantages of a Roux, by closing with sutures the efferent or duodenal portions of the intestines between the two anastomoses. In other words, according to Mattoli, the operation should be performed in three steps:

First.—The jejunum is anastomosed to the posterior wall of the stomach as in the von Hacker.

Second.—The two branches of the jejunum are united and anastomosed together about three inches from the gastro-enterostomy as in the Braun-Jaboulay.

Third.—The afferent branch of the jejunum between the two anastomoses is held between the

Fig. 4.



thumb and the middle finger of the left hand placing the fingers longitudinally. The pressure of the index finger forms a groove in the intestine and the two resulting ridges are sewn together with a number of stitches of an interrupted or continuous suture; as a consequence this section of intestinal tube is here changed into a solid cord.

The *circulus vitiosus* is thus absolutely prevented. The bile and pancreatic juice cannot flow into the stomach and are entirely drained into the jejunum. The patient is not affected with vomiting after the operation and adequate nourishment can be administered as soon as the patient is out of ether. There can be no question that this operation is more safely and quickly performed than the operation of Roux. Besides by adopting this process the surgeon is not compelled to follow it to the end. He may desist at each step if the condition of the patient is not satisfactory.

Having had a recent opportunity to try this method with successful results, I will submit the history of the case.

Mrs. G. M., a widow, fifty years old, was perfectly healthy up to August, 1903, when she began to feel a pain in the right side of the abdomen. From October she had vomiting after meals. Denutrition increased and the vomiting became so frequent that by the middle of December the patient was unable to retain any food whatsoever.

I saw her first in December, 1903, and found her much emaciated, the tumor of the pylorus could be palpated and almost be seen through the thin walls of the abdomen. Having made the diagnosis of epithelioma of the pylorus I advised gastro-enterostomy as a preliminary operation to pylorectomy.

The patient was admitted to St. Mark's Hospital on January 2, 1904, and I performed the operation on January 5. An incision was made between the ensiform cartilage and the umbilicus, the peritoneal cavity was opened and the parietal peritoneum was fixed to the margins of the wound. The great omentum and the transverse colon were drawn outside the abdominal cavity, the latter being spread. The transverse mesocolon was opened with a blunt instrument, through the aperture of which the stomach was drawn and secured by the fingers of an assistant which brought the posterior walls of the viscus as far out as possible. The stomach being enlarged it was possible to perform the operation outside the abdomen.

Having located the Treitz ligament, I took hold of the jejunum and brought it near to the stomach in such manner that the portion to be anastomosed was 25 cm. distant from the ligament. The transverse colon and the epiploon were then replaced in the abdominal cavity. Sterilized towels and gauze sponges were disposed in such a way as to prevent infection of the peritoneal cavity from the contents of the intestines.

The jejunum was sewn to the stomach by three rows of sutures, the first seroserous, the second seromuscular and the third mucomucous. In the same manner I united the two intestines about three inches from the gastro-enterostomy. The afferent portion of the jejunum was then closed by a number of stitches according to Mattoli's method, as above described.

Ether anesthesia was employed and an intravenous saline infusion administered to the patient during the operation. The patient had a spell of vomiting as soon as she was out of ether, but has not vomited since. Four hours after the operation she was able to retain fluid nutrition and solid food was given on the second day. Convalescence was uneventful. The temperature has always been normal. The wound healed by primary union. Twelve days after the operation the stitches were removed and in two weeks the patient was permitted to leave her bed. She was discharged from the hospital on January 30, 1904.

206 East Seventeenth Street.

ASTHENOPIA: A CLINICAL STUDY.*

BY D. H. WIESNER, M.D.,
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UNDER the term asthenopia are included a long train of symptoms, subjective and objective, that result from faulty formation of the eyes, from an overuse or improper use of the organs of vision, or from both.

Definition.—The word asthenopia is a compound derivative, literally meaning without strong sight; ordinarily called "eye-strain."

Prevalence.—How common is the complaint "weak eyes"; "poor vision"! More and more frequent is this becoming; not so much so in rural districts, where life is less intense, but in crowded populous cities, where the rush of daily living demands constant application of the eyes at close range many hours in the day is asthenopia common. This fact is borne out when it is stated that more than 50 per cent. of the office work of the oculist is the relieving of asthenopia; the same percentage prevails also in those of our hospitals and dispensaries that have eye departments. Another side of this is evidenced in the very numerous advertisements in newspapers and elsewhere of the so-called "refracting opticians," "optical specialists," etc. Shop signs of these specialists abound; their positiveness is alluring: "If you have headaches come in." "Astigmatism properly corrected." How unskilful is the fitting of errors of refraction by these "specialists," oculists generally could testify.

Cause.—The cause of this prevalence is also clear. With the overcrowding in our large city comes the keen competition for position and even existence, often requiring the application of the eyes many hours of the day and far into the night, and that at close range; bad enough in the daytime, but worse at night by artificial illumination. The same applies to children and youth during the school years, for overstraining and overuse of the eyes by too long-continued application to study and school work will cause eye-strain.

Varieties of Asthenopia.—First, the accommodative. All eyes, in order to see clearly at close range, must call into action the ciliary muscle: this muscle surrounds the lens, inside of the globe, and by its action causes a further convexity of the lens, so that objects may be properly focused on the retina. Hyperopes of any large degree also have to use this muscle of accommodation for distant vision, because of the formation of the eye; it is readily seen, therefore, why with this refractive error symptoms of eye-strain are so common.

The Muscular.—The act of accommodation is accompanied and assisted by the act of convergence, both internal recti taking part in it: if this convergence be long continued it is easy to understand that an overstrained muscle will rebel and assert itself; furthermore, if for this reason, or for some other, the balance or equilibrium between the extra-ocular muscles be upset, the symptoms called muscular asthenopia will be likely to follow.

The nervous, hysterical or *psychical* asthenopia must be mentioned, for it is also met with; if accommodative and muscular asthenopia can be excluded, or if after careful examination and correcting of these conditions, the eye-strain symptoms persist, the nervous variety may be suspected and should be treated.

The purpose of this paper is to confine itself mainly to the accommodative and muscular variety of asthenopia, using the office case book to illustrate and describe the symptoms resulting from these conditions. While age may be a factor, and asthenopic symptoms be prevalent before the age of forty years, yet it is not uncommon to have patients over forty years present themselves with asthenopic symptoms, that is, in contradistinction from presbyopia.

Conditions of the Eye, Producing Eye-strain Symptoms.—In simple hyperopia they are common; in hyperopic astigmatism they are usual, and in compound hyperopic astigmatism they are the general rule. The severity of these symptoms, of course, depends on the amount of use and strain of the eyes.

In myopia, with the exception of the reduced distant vision—which is not to be called an asthenopic condition—eye-strain is not met with; with myotic astigmatism eye-strain symptoms are noticed, and also with the compound variety. The large majority of cases are those with hyperopia, with or without astigmatism, because it is in these cases that the accommodative act is so continuously required.

The Muscular.—This is a loss or upsetting of the equilibrium of the extrinsic muscles of the globe. These muscles bear, or are supposed to bear, a certain definite relation to each other, as to their action and power to roll the eye in one direction or another. If this power be disturbed it will manifest itself. Many of the symptoms to be mentioned are present in either or in both of these varieties.

The great relief resulting from the wearing of properly fitting lenses is a source of extreme gratification both to the patient and the oculist; that this may lead to overenthusiasm can be understood—to find that asthenopia is at the bottom of all the ills which flesh is heir to, is not a common experience with oculists. That it may be a factor in epilepsy is granted, and that partial relief from this condition often follows a proper correction of the eye conditions present is also granted; but that amelioration and cure of mental states or diseases follow lens or operative corrections of asthenopia is not a common experience. The scope of this paper is broad enough, but the time allowed for its reading makes it necessary to be brief.

Sex does not enter materially into the diagnosis; temperament does, however, and age is a factor, as most sufferers from eye-strain are

* Paper read at Annual Meeting of State Medical Society, January, 1904.

under forty years; and growing school children frequently complain.

Headache is a prominent symptom; pain in different parts of the head and in the eyes. This is of different kinds and varying intensity; at times sharp and shooting, at other times dull and throbbing; the temples and forehead over the eyes are favorite seats of pain; again, all over the frontal region and extending on either side to the temples; pain may be on top of the head and extend backward to the occipital region. If the ache be in or near the eyes it is generally due to the accommodative variety of this error—if further away, to the muscular; but it may not be always possible to distinguish the one from the other. These headaches are liable to come on in the afternoon and are carried through the evening and to bed, to be followed by relief in the morning. This ache is positive, intense; one case is recalled: the child came home from school with this pain and had to go to bed; this was followed by a vomiting spell; relief came in the morning. Several recurring attacks of this nature were relieved, and in time cured, by wearing proper lenses.

Blurring of Vision.—This is a common symptom both for near and distant vision; it happens that while looking at an object, suddenly all becomes blurred and blank before the eyes; or objects become indistinct, requiring a closing of the lids for a time, or the rubbing of the eyes to bring back clear vision: this condition is due to a sudden, though only temporary, failure of accommodation, that is, the ciliary relaxes, the lens becomes flat and vision is indistinct. Some call this "dizziness," some "swimming before the eyes." After a short rest the ciliary regains its tone and clear vision returns. When this is a prominent symptom the sufferer often becomes aware of it before its actual onset and can anticipate it by a short respite from work. This is often observed after some systemic disease, such as grip or typhoid fever; for in common with other muscles the ciliary participates in the general lack and loss of muscular tone and vigor. This condition must not be confounded with the paresis following diphtheria. Here there is a distinct nerve enervation, in asthenopia there is only a momentary loss of tone, inconvenient, to be sure, but only the symptom of a condition, not of a disease. Blurring of vision asserts itself after a continuous use of the eyes; thus in the morning it is uncommon, but is experienced toward the afternoon and early evening, particularly by artificial light. Under this head must be mentioned inability to see the blackboard work distinctly, so often complained of by students, old and young. Excluding a myopic state and poor illumination, this is due to a refractive error that the ciliary is not always or continually able to overcome.

Lacrimation.—Watering of the eyes is often a prominent symptom, and is probably reflex in its nature, due to an irritation of the tear-gland as a result of the eye-strain; excluding acute or chronic inflammatory conditions that cause lacrimation, there is an overproduction of tears: as they flood the conjunctival sac and are not carried off freely the moisture runs over the edge of the lids and down the face, causing decided annoyance; often redness and injection of the superficial conjunctival blood vessels accompany this lacrimation.

Diplopia.—Double vision is a not infrequent complaint. In some instances the feeling is that the eyes are crossed without the diplopia, in others there is a troublesome diplopia. Here the balance in the extrinsic muscles has been upset; the internal recti being overused and overstrained, are weakened to such an extent that the externi have strength enough to pull the eyes slightly beyond the point where objects fall on both maculæ simultaneously, and thus cause diplopia. This is not constant and does not produce an apparent squint unless of long duration. It is proper, however, to mention here that a decided squint is in a certain proportion of cases the direct result of an error of refraction.

Lid conditions should be mentioned.

Spasmodic twitchings of the lids come on without warning, and for a few seconds or longer the patient experiences muscular contraction of the levator or of the orbicularis, at times of both, alternately; a rapid, jerky spasmodic movement ending abruptly, to return again at uncertain intervals. A slight rubbing—massage—of the lids with the fingers will usually quiet this twitching.

Pinching of the eyelids is often met with, done either to increase vision or to accentuate it—astigmatics early and easily learn of the value and help of this act and practice it to increase and sharpen vision.

Blepharospasm.—It is readily seen how from a long-continued twitching of the lids or the pinching together, a condition of blepharospasm may result, while in most instances it is due to other causes—generally corneal—yet at times is encountered as a direct result of asthenopia, and is one of the hard things to overcome in the treatment of eye troubles.

Inflammatory conditions must be mentioned, as certain of them result from eye-strain, usually of the refractive kind. If bad hygiene, poor or malnutrition, rheumatism, gout and other diseases which are manifestations of the results of faulty metabolism, have been eliminated or recognized and cured, and the condition still persists, relief and cure of these symptoms promptly follow the correction of the asthenopia.

Blepharitis Marginalis.—An inflammatory condition of the lids in which the edges are red, somewhat thickened, and the seat of fine scaly particles or even crusts. If this persists there may be loss of some of the eyelashes—the picture presented being a peculiar one.

Hordeolum or Sty is an inflamed Meibomian gland; one attack is liable to be followed by another; painful, causing a swelling at the situation of the gland and often considerable swelling of

the lid, usually breaking down and relieved by the discharge of the pus.

Chalazion.—While not always an inflammatory condition, is also so frequently associated with an error of refraction that it may be mentioned as a result of asthenopia—the characteristic hard round swelling in the lids, rolling under the finger, not painful unless inflamed, which is rare, and gradually increasing in size. With proper correction and regular massage, relief may be expected.

As this paper must be brief and concise, some things have been left unsaid; while those said might have been elaborated; and if nothing startlingly new has been advanced there is also nothing uncertain put forward.

The purpose of the paper is to call renewed attention to a very prevalent condition, namely, asthenopia,—to its causes, manifestations and, most briefly, to its relief. Also, that many who are the sufferers from this asthenopia are induced by alluring and misleading statements to apply for relief to those who are unfitted and unqualified to treat them; how much these inefficient practitioners are on the increase is everywhere apparent. Relief from this state of affairs is needed. May the time soon be when the practice of medicine will be limited strictly to those who, by education and experience, are legally qualified to pursue it.

139 East Forty-sixth Street.

SOME CONSIDERATIONS IN THE TREATMENT OF TUBERCULOSIS OF THE TESTICLE.*

BY JOSEPH A. BLAKE, M.D.,
OF NEW YORK.

I HAVE been asked by your chairman to start a discussion upon tuberculosis of the testicle. As practitioners we are chiefly interested in the treatment of this condition, and consequently I have decided to limit myself to the expression of my views on the subject. In apology I may say that I have been unable to obtain the subsequent history of my cases as fully as I should wish in the short time I have had at my disposal.

My experience has been somewhat limited. I have at hand the histories of eight cases operated upon by castration with removal of the entire vas deferens in all, and in two with simultaneous removal of the seminal vesicle. In one case double castration was performed. I have never performed epididymectomy alone. In all cases the disease was restricted, as far as could be ascertained, to the genital apparatus, with the exception of one case previously reported to this section, in which, in three successive operations, I removed the kidney, ureter, left testicle, both seminal vesicles and most of the prostate. It is now nearly three years since the last operation on this patient and he is practically a sound man, having almost entirely recovered from the cystitis which accompanied his other lesions.

* Read before the Section on Genito-urinary Surgery, of Academy of Medicine.

The other patient from whom I removed the seminal vesicle with the vas and testicle was operated upon six weeks ago, and I have brought the specimen, since it shows extremely well the manner of extension from the testicle to the seminal vesicle often observed in these cases. You will observe that the disease has not extended continuously along the vas, but that, with the exception of two or three nodules at the distal and proximal portion of the vas, the remainder is free. This patient also had deep strictures necessitating a perineal drainage of the bladder, but he has been back at work for two weeks, his wounds being entirely healed before he left the hospital. None of the remaining cases have been followed, but none have returned for further treatment.

Returning to the consideration of operative treatment, since it is generally conceded that tuberculous foci in these organs should be extirpated unless in the presence of extensive tuberculosis elsewhere, we may classify the questions arising in the following order:

1. *Regarding the Nature of the Operation.*—(*a*) Whether castration or epididymectomy; (*b*) as to the amount of the vas deferens to be removed; (*c*) as to the removal of the seminal vesicle when involved.

2. *Regarding the Operative Technic.*—(*a*) In excision of vas deferens; (*b*) in excision of seminal vesicle.

Castration or Epididymectomy.—When both testicle and epididymis are involved, there is no question. Castration is the proper operation. When the epididymis alone is involved, many men of large experience advocate epididymectomy. It is extremely difficult to obtain trustworthy statistics upon the efficacy of this measure, particularly in regard to the question of local recurrence, yet one has only to glance over the reports of cases to find that not a few have a persistent sinus remaining or have to submit later to orchectomy. As I have already stated, I have never done this operation, possibly because I could not satisfy myself that the epididymis alone was affected. My preference is castration unless both sides are diseased, when I should leave one testicle if possible.

The gland is useless when the epididymis is removed unless for internal secretion and one testicle suffices for that. Horwitz states that he has not observed atrophy of the testes or diminution of sexual power after epididymectomy, but it is not clear that the cases observed were double operations. Nor is the length of time in which the cases were under observation after operation stated. In a man sixty-eight years of age, whom I castrated for enlarged prostate, when that operation was in vogue, sexual vigor with emissions was retained for nearly two years after the operation. If epididymectomy has no influence upon the sexual vigor, the fact is a strong argument in its favor.

The Amount of the Vas Deferens to be Removed.—In all my operations I have removed

the vas deferens with, usually, a portion of its ampulla. The importance of so doing is well illustrated by the specimen shown, and by a large number of reported cases in which the disease has skipped large portions of the vas.

The Removal of the Seminal Vesicle When Involved.—My opinion is that the infected seminal vesicle should be excised in every case in which the disease is limited to the genito-urinary tract, for the following reasons: first, that tuberculous foci in general should be removed as far as possible, and secondly, to prevent implication of the remaining testicle and the urinary tract. When we consider that in 50 per cent. and, according to some, 75 per cent. of the cases of tuberculosis of the testicle, the other testicle later becomes affected, we can appreciate the importance of eradicating the disease, particularly in the region of the seminal vesicles and prostate. Even after castration, according to V. Bruns, the other testicle becomes diseased in 23 per cent. of the cases. On the other hand the seminal vesicle is said to shrink away in a large number of cases when the vas deferens is removed (Horwitz).

Again, the operation for excision of the seminal vesicles is a difficult one and not to be lightly undertaken unless one is reasonably sure of his technic. In proper hands, however, when there are no other contra-indications its dangers are less than those of allowing the tuberculous focus to remain. In regard to the technic in operations upon the vas deferens and seminal vesicle, I have found the following method to be satisfactory:

In removing the vas with the testicle, the testicle is first excised with any skin that may be invaded, the incision is then carried up to a point opposite the internal ring and through the aponeurosis of the external oblique. The vas deferens having been separated the remainder of the cord is divided, and the vas being drawn upon the peritoneum is pushed away from it with the finger until it is freed down to the ampulla. A ligature is then tied about it as low down as possible, or it is evulsed, the finger of the other hand separating it at the ampulla. The wound is then closed, as in the repair of hernia. By this method a portion of the ampulla is generally removed with the vas. This method is usually preferred to that of Büngner, in which the vas is evulsed from the external ring. When I have removed the seminal vesicle, I have first excised the testicle and vas deferens in the manner described and have then attacked the vesicle through the curved perineal incision known as Zuckerkandl's. After freeing the dorsal surface of the prostate, the seminal vesicle is exposed by incising the layer of the rectovesical fascia binding it to the bladder. It can then be shelled out without much difficulty. At the same time any lesion in the prostate can be attacked and handled as its extent of importance may require.

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SOME REMARKS ON TUBERCULOSIS OF THE URINARY BLADDER.

BY ALEX. B. JOHNSON, M.D.,
OF NEW YORK.

Tuberculosis of the urinary bladder usually occurs in combination with tuberculosis of other portions of the urogenital tract.

Among 35 cases observed by Casper in three the bladder was found to be the sole seat of the disease. In 14 cases the kidneys were also the seat of tuberculosis; in seven cases the genital organs; in two cases the joints; in five cases the lungs; in three cases general tuberculosis existed. In one case the patient was the subject of lupus.

According to Koch, the following modes of infection are possible:

(*a*) *In the presence of tubercle bacilli in the body*: (1) Infection through the blood current; (2) infection by way of the lymph channels; (3) infection by the excretion of tubercle bacilli through the kidneys with or without disease of these organs.

(*b*) *Through the introduction of bacilli from without*: (1) By cohabitation; (2) by catheterism.

Bladder tuberculosis presents itself to us clinically in most cases, as a more or less localized, occasionally diffuse process combined with tuberculosis of the kidney and ureter; as tuberculosis of the prostate and seminal vesicles, or of the epididymis and vas deferens. Such combinations are so general that many surgeons of large experience have never seen a case of tuberculosis of the bladder alone and not a few deny the probability of its occurrence.

As might be expected from the mode of infection, that portion of the bladder forming the trigonum and the parts adjacent to it are the most frequent seat of the disease. In advanced cases, however, a large part of the bladder wall may be involved. The lesions noted vary with the age of the process. In the early stage, localized swelling and congestion, such as we regularly see at the mouth of a ureter when the kidney is the seat of tuberculosis, are present. Later, tuberculous nodules of greater or less size occupy the affected area, and finally, tuberculous ulceration of characteristic form and appearance takes place and progresses with the formation of much cicatricial tissue. The organ becomes more rigid, loss of distensibility results and the capacity of the bladder may thus be greatly diminished. Mixed infection adds the lesions of other forms of cystitis.

The symptoms of bladder tuberculosis vary to the same extent with the seat of the lesion and are usually much complicated by the coexistent lesions in other portions of the genito-urinary tract. If, as rarely happens, the region of the trigonum remains free from disease the characteristic symptoms of bladder irritation may be slight or long absent. If the trigonum and vesical end of the prostatic urethra are involved the symptoms are marked. They consist of frequent

desire to empty the bladder and pain which is referred to the perineum, the course of the penile urethra, the glans penis and the sacral region. A severe spasm of pain usually follows the end of urination. The pain of tuberculous cystitis is severe and exhausting and many of these patients become addicted to the use of morphine. In advanced cases the misery of these unfortunates is pitiable in the extreme.

As a result of the local irritation, notably when the prostate is also involved, patients sometimes exhibit an abnormal activity of the sexual apparatus and may continue to copulate industriously, even when the disease is well advanced toward a fatal termination. Hemorrhage from the ulcerated areas may occur. The bleeding may be microscopic or so severe as to seriously diminish the patient's strength or even imperil his life. The intravesical bleeding may cause retention of urine of a painful and particularly distressing character. The condition of the urine will vary according to the presence of a complicating cystitis or a tuberculosis of one or both kidneys. The urine is usually acid, and if the kidney is also involved there will sometimes be polyuria and urine of a low specific gravity. The amount of pus in the urine will vary greatly and is scarcely to be relied upon as a typical diagnostic sign.

In nearly all cases tubercle bacilli can be demonstrated in the urine either at once or after repeated examinations. If the centrifuge be used it will very rarely be necessary to resort to the inoculation of animals to establish the diagnosis.

The general health of these patients suffers as is the case in tuberculosis of other organs. They lose flesh and strength and, if mixed infection is present, they will suffer from chronic septicemia accompanied by fever, night-sweats, loss of appetite and often from diarrhea. In such cases the pain is an important factor in producing deterioration of the general health.

Diagnosis.—Tuberculosis of the urogenital system is a disease of adolescence and young adult life. It may also occur as late as middle age but is rarely developed after the fifth decade. Men are more commonly affected than women.

When a young person comes to us complaining of painful and frequent urination, if he be a male we seek to exclude gonorrhea; if the individual is female, hysteria, a uterine displacement or diseased adnexa. If the urine is found to be purulent we further seek to exclude stone in the bladder or stone in the kidney. Search for tubercle bacilli will often demonstrate conclusively the presence of a tuberculous lesion somewhere in the genito-urinary tract. The testicles and vasa deferentia will often show the characteristic nodular enlargements of the epididymis and the thickened vas deferens. The finger introduced into the rectum readily tells us whether the prostate is hard and nodular and whether the seminal vesicles are increased in size and indurated. The tuberculous kidney is often slightly tender, although at an early stage of the disease it is rarely so much increased in size as to be readily palpated.

The cystoscope will then enable us to see the characteristic changes in the bladder, if such be present, but only too often we are able to see tuberculous disease beginning at the orifice of one or both ureters, indicating disease of the corresponding kidney. In fact, in by far the largest percentage of cases of bladder tuberculosis there will be such evidence of tuberculous disease in other portions of the genito-urinary tract, that we are obliged to regard the process going on in the bladder as of secondary interest from the point of view of surgical treatment. Not that the disease of the bladder is less serious or less important, but experience has taught us that until the other tuberculous foci have been removed we can do little for the bladder itself.

Treatment.—In many cases of beginning tuberculosis of the bladder the treatment consists in removing the complicating foci of disease in the kidney, the seminal vesicle, the prostate, the epididymis or the vas deferens as the case may be, and in letting the bladder alone. If the other foci of disease can be removed the bladder will often get well, provided the patient can be placed under favorable hygienic conditions, such as removal to a dry and equable climate, life out of doors, good food and the other measures which have been found useful in many forms of tuberculous disease.

If disease of other organs can be excluded it is my belief that general and hygienic treatment offers the patient a better hope of cure than any local operative measure. It is true that a few cases of tuberculous ulceration of the bladder have been greatly benefited and even cured by operative removal of the disease, but where one has been benefited ten, in my belief, have not, and a good proportion have been left with a permanent urinary fistula lined with tuberculous tissue. It has long been known that a bladder which is the seat of tuberculosis is often made worse by instrumentation, and the various forms of local treatment, so very useful in other kinds of cystites, usually fail to do good in cases of tuberculosis, and often do great harm.

There are those, however, who believe that improvement sometimes follows the periodical introduction of bichloride of mercury solutions into the bladder or the instillation of iodoform emulsion. The use of internal antiseptics in tuberculosis of the bladder is of doubtful value. Of the many used, creosote seems to bear the best reputation.

Certain operative measures may, nevertheless be called for in cases of bladder tuberculosis. In advanced cases the bladder sometimes becomes extensively diseased and greatly contracted. The sufferings of these patients are so intense as to be beyond endurance. Under such circumstances a permanent suprapubic opening made into the bladder for drainage may give great relief and is followed by marked improvement in the general health of the individual. In certain cases of severe hemorrhage from the ulcerated vesical

mucosa a suprapubic incision into the bladder, for the purpose of controlling the bleeding, may be called for. Under such circumstances the surgeon might properly proceed in one of several ways, according to the condition found. If an ulcerated area not involving the orifice of the ureter exists it might properly be excised and the wound closed by sutures. The curette and the actual cautery might be employed to destroy the base of the ulcer. If the orifice of the ureter is the seat of disease the kidney on that side is probably tuberculous and will perhaps require removal. The cautery might then be cautiously used for the control of bleeding preceded by the use of a curette. If the bladder is still in fairly good condition an effort should be made to close the wound, else a permanent tuberculous fistula will almost certainly result.

In women access to the bladder through the urethra is comparatively easy and in cases where the kidneys were not involved a number of surgeons have reported favorable results from curettage, cauterizations and applications to the diseased bladder made through a speculum. Such treatment may be tried preparatory to the hygienic measures before indicated, or even where such hygienic measures cannot be carried out.

My conclusions, however, in regard to the treatment of tuberculous cystitis are as follows: (1) If other tuberculous lesions of the genito-urinary tract exist their operative removal is sometimes followed by improvement and even cure of the process in the bladder, provided the patients are placed under the most favorable hygienic surroundings. (2) Operative treatment of the bladder alone in the presence of tuberculous lesions of other portions of the urinary tract is usually harmful rather than beneficial. (3) The local treatment of the tuberculous bladder by means of injections or applications through the urethra is generally useless and often very deleterious. (4) The internal administration of the drugs known as urinary antiseptics is generally useless. (5) Palliative operations, such as suprapubic drainage, may be useful in advanced cases. (6) The general or hygienic treatment, suitable climate, out-of-door life, etc., offers these patients the best hope of recovery. (7) Such hygienic measures should be preceded by the operative removal of tuberculous foci in the kidney, the epididymis, the prostate and the seminal vesicles if such exist and the patient is still in sufficiently good condition to bear the operative procedure. (8) In those rare cases where the bladder alone is affected over a moderate area only, the operative removal or destruction of the diseased tissue may be followed by improvement and even cure.

Typhus among Germans. Capt. Dannhauer, correspondent in German Southwest Africa of the *Lokal Anzeiger*, cables from Windhock that the number of soldiers suffering from typhus fever in the hospitals at Otjihaenena, Windhock, Okahandya and Karibib is 175.

A FEW CONSIDERATIONS CONCERNING THE MECHANISM OF DEVELOPING MENTAL DISORDER.

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HOWEVER convenient the distinction between "health" and "disease" as applied to opposed groups of phenomena, the physician who aims at early diagnosis and prophylaxis must recognize the fact that as distinct principles or entities neither has separate existence. More than a century ago Bichat, in expressing the relations of pathological anatomy to clinical medicine, used the following words: "It is not alone the science of these changes which primarily or secondarily develop gradually in the course of chronic disease; it includes the examination of every alteration to which our parts are subject, at whatsoever period of the disease." Three quarters of a century later Claude Bernard, in developing this conception along physiological and clinical lines, said, "Between any form of disease and health there are only differences of degree. No disease is anything more than an exaggeration or disproportion or disharmony of normal phenomena." From Bichat's time to the present—indeed, most markedly in the recent achievements in chemical physiology and chemical pathology do we trace the further development of this conception.

In no particular field, perhaps, is the relativity of disease and health more apparent than in psychiatry, although the almost universal acceptance of this view has not prevented the criticism by most laymen, many physicians, and courts of law quite generally, that in the determination of the existence of mental disorder we are prone to confound health with disease, and *vice versa*.

The study of the mental aspect of man can not be separated from that of his bodily functions; and mental disorder is to-day inconceivable except as a result of defective organization, perverted nutrition, or alteration in structure—with consequent disorder in functioning of the complex organ which immediately supports it, or of change in remote organs which minister to the brain's nutrition. We cannot always correlate observed nervous and mental phenomena with cell changes or their complex metabolic activities; nor is it reasonable to expect—from their peculiar nature—that we can ever attain the final explanation of morbid psychic phenomena in constitution of nerve cell. It is not too much to say, however, that we are beginning to understand how they may have their origin in nutritive changes which modify and interfere with the cellular mechanism upon which the highest cerebral function—the process of "associative memory"—depend.[1] We have increasingly accurate knowledge of this last named function and, with it, of the order and mode of development, that is, the "mechanism" of mental states whatever their character. Our present-day insight into the nature

of these inner processes, of their connection and interaction with the physical and chemical processes of the human organism is, in large part, psychology's contribution to the sum total of science, and its practical value to medicine cannot be over-estimated. A glimpse into this mental mechanism is essential to a clearer comprehension—not only of the early morbid manifestations of mind, but of the latest and most unmistakable symptoms of insanity as well. In this paper it is with the former aspect that I shall more particularly have to do; attempting to indicate the "gross anatomy," as it were, of evolving mental disorder from ideas and emotions which, with associated states of the organism, must be regarded as earlier phases and requisite preconditions to the clinical entities we commonly term insanity.

Insanity is advanced mental disorder marked by characteristic psychic symptoms. It is exhibited in conduct or action; this, with the frequently accompanying phenomena of illusion, hallucination, or delusion, is to be regarded, in the vast majority of instances, as merely the latest episode in the most recent chapter of the patient's history. "The lunatic's horrifying visions, panic fear, profound depression, and delusions of persecution are all constructed from the material of daily fact." From the earliest subjective symptom of disturbed or perverted sensation and perception, through morbid idea, impulse, emotion, obsession, and the more marked dissolutive phenomena of hallucination and delusion, to the final culmination in violent deed, there is a correlated series of psychic events having no sharp definition of the morbid from the normal. In their gradual transition, however, there are symptoms so distinctive of the mind's morbid functioning that they clearly foreshadow the more serious mental disorder into which they may at any time develop under favoring circumstances of exhaustion, toxemia, intoxication, or stress from any cause whatsoever.

Early slight deviations from health can be fully appreciated only through an understanding of the normal mental mechanism, and for this there is necessary a knowledge—not only of the general physical and physiological substratum upon which their development is conditioned, but of the "peculiar" manifestations of mind, the products of brain functioning. These, the most "personal" matters of the patient's life, are the images or materials of which the mind is composed; the individual sensory experiences and habit of associating and combining these into ideas, judgments, and beliefs; his intellectual preoccupations; his feelings, impulses, interests, personal passions, and special or characteristic mode of reacting to environing circumstances as determined not only by their nature, but by peculiarities of organization as shown by resulting ideas, emotions, and tendencies. Previous happenings in the individual's mental life are here of equal significance with those which pertain to his physical organism when considered in their relation to bodily diseases. And morbid mental states are only elucidated when thus viewed in relation to earlier psychic activities. The earliest indications may appear inconsequent to us because of our ignorance of the laws which govern their development, but this is no excuse for excluding them from our notice or allowing them to pass unheeded.

It cannot be urged that in thus considering idea, emotion, and impulsion, that we are dealing with something vague and intangible; all this they may be in the sense that they are not material, yet, as present to the patient's consciousness and *tending to material expression in attitude, word, or deed;* and as influencing life and its organic processes—as well as being the highest manifestation and result of it—we cannot consider them apart from the life of the organism as a whole. The modification of psychic events, when encountered as accompaniments of defective, perverted, or diseased states of the organism, are therefore as real as any facts with which the physician (as well as the psychologist) has to deal.

All mental development is dependent upon sensation; that is, upon transmission to the brain of the special sensations of sight, smell, hearing, taste, and touch, as well as of the innumerable muscular and organic sensations which stream into the sensorium informing the nerve centers of what is going no in the various outlying regions of the body. With normally developed sense organs and cerebral cells, with their connecting fibers, such impressions are associated in memory and fuse, combine, and organize into images and various combinations of images in accordance with laws which further govern their association, inhibition, and tendency to final transformation into action.

The expansion of sensations—the materials of the mind's growth—into images, and from these into the most complex combinations of images, is made possible by the marvelous complexity of the underlying brain mechanism. In receiving, combining, fusing, and associating these innumerable sensations there are impressed upon them certain characteristics depending upon peculiarities of the individual brain organization. Whether received, retained and associated, or recalled in normal or morbid manner, the sensation, image, or idea seeks to escape as movement; in this not only resembling, but following the law of all neural action; that is, first sensation, then movement. And just as the simple reflex varies in amount or intensity, depending upon the character and strength of the sensation or impulse and the varying conditions of sensory organ, conducting fibers, and receptive centers, so in the very complex psychic sphere we encounter variations, perversions, and disturbances depending upon the intensity or duration of the stimulus and condition of the receptive sensory, and of the higher inhibitory centers. While the final result in motor or secretory manifestation is primarily referable to the original stimulus (sensation), the defective, excessive, or disproportionate reaction must be

regarded as due to abnormal conditions in the underlying reaction organ—that is, the brain.

In the mind's upbuilding or associative process by "the delicate interlacing of the strands of experience in the composite pattern of the mental tissue" sensation is the essential and earliest element. In dissociative or disorganizing processes we look to the sphere of sensation (with its psychic equivalent—idea) for the earliest indications of mental disorder: for alteration or modification of previously known opinions; or impaired capacity for judging; these are usually revealed by careful search, whether the disorder originated in distant or outlying parts of the organism or in the complex sensory areas of the brain. The symptoms, in all their apparent disorder—from the earliest "sensory ingredient" and its more complex counterpart, idea, to final expression in movement, that is, in physiognomy, attitude, word, or deed,—present a definite order and uniformity, with variations depending upon differences of original constitution and "experiences" of the organism which manifests them.

It is a fundamental principle of psychology that every idea has a tendency to be transformed into action. Amid the multiplicity of our ideas but few result in action, however, because of the antagonizing or inhibitory influence of the many other ideas simultaneously present in consciousness which rob them of their impulsive power;[2] these latter, we say, result in inhibition of movement, hence the law as more generally stated that "every idea results either in movement or in inhibition of movement—in action or its reverse." Any one of the innumerable acts of our daily lives illustrates the operation of this law. Whether it be the complex muscular movements of our professional activities or the simplest manual tasks, fixation of the attention upon the matter in hand is necessary for their performance. There is thus a narrowing of the field of consciousness; the ideas involved encounter no opposing ideas and the appropriate movements follow of necessity and as inevitably as those of any reflex act. If the combination of movements in any particular act has become habitual, owing to the increased permeability of the nerve paths through such frequent repetition of the act, attention becomes superfluous and, according to the general laws of brain-habit, the most complicated muscular movements, once inaugurated, are performed without the necessary intervention of attention, or indeed, of consciousness. And so in the sphere of the emotions: at first consciously entertained, and perhaps with adequate exciting cause, they may, through frequency of repetition, long duration, or morbid intensity, attract all the forces of the organism; with the field of consciousness so narrowed that no conflicting ideas or emotions are interposed they become translated into action with clear consciousness; with blurred states of consciousness (the rule under stress of emotion and passion); or without any intervention of consciousness whatever, as so constantly noted in the outbursts of fury of the imbecile and epileptic.

Among the countless images of which the human mind is composed and which differ with the degree of culture and the experiences of the individual, there is unceasing change and variation. Indeed, clear consciousness for the individual exists only upon condition of such change and of continual renewal through varied sensations and emotions. So essential is this to healthy mental life that "capacity for change"—that is, ability to transfer the attention to a variety of objects—is one of the evidences of normal mind.

With all this multiplicity and variety of mental images and ideas we look for some order or system; and this we find in the trend of habitual lines of thought and in conduct as determined by emotions, inclinations, and appetites. "Human character" is but the result of organization or association of the sensations, images and ideas resulting from experience, in a manner which harmonizes with the emotions and desires of the individual. In all characters, however, conflict of these forces constantly occurs; but, depending upon the intensity of opposing ideas and emotions, a variable degree of "control" is manifested. "Stability is a term used to designate the degree or vigor of the controlling and coordinating functions which measure the individual's power to guide or quell emotions, appetites, and inclinations and make them subsidiary to healthy life. To do this is to modify such emotions by association with a complicated system of ideas. Ability to do this presupposes a capacity for seeing things in their normal relations—for giving events their proper importance and significance. Now the very essence of morbid states of mind consists of an inability to see things in their true relations and signifies a lessening of the ability to think or reason logically or with normal rapidity. There is disorder, perversion, or defect of the highest and most complex intellectual faculties; a break in the continuity of the mental processes; a narrowing or retrenchment of the field of consciousness with proportionately increased tendency for the dominating idea or emotion to be transformed into action. It is to the mechanism of this limitation or narrowing of the field of consciousness that we must look for explanation of the "change in character" and "weakening of the will," which terms have been used to indicate alteration in all that were regarded as highest and most complex in man's mental organization.

It is clear that what were regarded as manifestations of "will" are, in reality, *the results of will;* that is, of choice as manifested in words, behavior, and deeds. While these acts of choice never reveal the total secret of mind, they do represent the final outcome of its complex processes—conscious in part, but for the most part unconscious—and, as the resultant of all the higher faculties, they become indices of character, that is, of organization or association with some unifying principle of the sensations and images resulting from experience.

"At the threshold of all action lie reflex, instinctive and impulsive nervous tendencies."[3] Will,

or volition is but the highest form—the psychic equivalent—of physiological inhibition so universally an attribute of the highest and most complex centers. In the normal exercise of its function it distinguishes man from other animals in the degree to which he can control, regulate, or inhibit lower instincts, emotions, tendencies and habits. In morbid mental states the narrowing of the field of consciousness is equivalent to removal, or lessening of this higher inhibitory power as represented by opposing ideas and emotions.

As an illustration of narrowed field of consciousness due to impairment of associative memory from physical causes, I borrow one that is familiar to all—a physiological rather than a pathological one: Under the influence of fatigue or exhaustion we frequently have a sense of limitation of our energies and, at such times, experience a perceptible difficulty in thinking or reasoning; there may be a hesitancy in making decisions and in assuming responsibility. There is a failure of the judging or comparing faculty, and it is with difficulty that we see things in their true proportions. After food and adequate rest our exhausted organism recuperates and the normal equilibrium is reestablished.[4] In the bodily sphere this condition of exhaustion, if prolonged, is manifested in further depression of the vital forces—a condition which we habitually regard as furnishing the requisite soil for the development and operation of all exciting causes of disease—bacterial and otherwise. So in the psychic sphere it supplies conditions in which all sorts of undisciplined impulses develop and manifest themselves; the various modes and passions, such as anger, jealousy, suspicions, dreads and fears.

Careful investigation into the mental phenomena of "fatigue" reveals the fact that the predominance of any particular idea or class of ideas is based upon an emotional state which, vague and indescribable though it may be, is found to determine what ideas shall and what shall not occupy the attention. All attention normal, as well as morbid, is found to be based upon emotional states. We know that images and ideas as organized into opinions and beliefs are, with none of us, solely matters of carefully rationalized judgment, or products of purely logical processes, but at bottom they are largely matters of feeling as determined by peculiarities of organization, early training and surroundings and immediate or remote interest (Royce). So markedly is this the case that it may be stated as a dictum that it is to man's instinctive and emotional nature that we must look for both the mass and momentum of human conduct. Organic (bodily) sensations very clearly enter into this emotional background which plays so important —even dominant—a part in our make-up and in guiding and directing our mental activities. Ordinarily, that is in health, this influence is subconscious; it operates beneath the surface. In disease, however, it is not only brought more vividly into light and so is the more readily studied, but is often the chief characteristic, as well as one of the earliest symptoms of mental disorder. Because of its intimate relations with developing morbid ideas I shall briefly consider the double aspect of idea and emotion resulting from mutually influencing brain processes.

Exhaustion from any cause narrows the field of consciousness in the sphere of ideas by interfering with the activity of associative memory. Emotion narrows the field of consciousness by attracting ideas which harmonize with the particular emotion. Whether exhaustion is temporary from overwork, illness, or toxic states of the organism, invariably are there concomitant emotional states which present themselves as the milder fears or apprehensions. Normally leading to conservation of forces through precautionary measures in the avoidance of further fatigue, exposure, excesses, etc., they are so far salutary in their influence. With the continuation of the cause, however, and especially if it is prolonged and severe, these normal apprehensions (fears) may imperceptibly shade off into the "trouble-bearing expectations" such, for example, as distrust and suspicion of the motives of others, unreasonable dislikes, or ideas associated with bodily aches and pains, the fear of illness or accident, the loss of property, and so on to "the thousand and one needless worries over the future which are simply providence for the morrow gone mad."

As the healthy individual reacts promptly from all causes of bodily disease, so the mentally stable react from causes of mental exhaustion and depression. Through the activity of the higher controlling and coordinating functions the lower emotional forces are held in check and so are prevented from entirely dominating the individual. But, just as we encounter varying degrees of susceptibility to all external causes of bodily disease, so we meet with a wide range of susceptibility to causes of mental pain. In contradistinction to those characterized as "stable" we encounter the "sensitive" or "unstable" who are exceedingly susceptible to emotional disturbance and in whom crises of emotion leave permanent imprints. Rarely met with where the nervous organization is entirely normal, in those of such neurotic constitution slight causes quite commonly bring undue results either in intensity or duration of the emotion (or both), and we see disappointment, grief and losses resulting in emotional states, either temporary or prolonged, which vary from mere passive joylessness, dreariness, discouragement and dejection, to active anguish, fear of eternal damnation and finally, absolute and complete despair. Whether engendered by exhaustion, defective nutrition of brain cell, toxemic states, or by ideas which gain entrance and attract harmonizing ideas, the process, or mental mechanism, is essentially the same in all and develops and propagates itself according to laws as fixed and inexorable as any which govern purely physical phenomena. Under these conditions one idea or one emotion among many

may not only be increased in vividness and intensity, but may be longer entertained until it finally besets, possesses or obsesses the individual. This is because, in the defective or exhausted state of the organism, it becomes increasingly difficult to marshal before the "mind's eye" the various and complex combinations of ideas by which the original idea or emotion is regulated or controlled. Any idea, with its accompanying or underlying emotion, may thus usurp the attention with varying degrees of intensity from that degree normally requisite to a proper understanding of events as they come within our sphere of interest to "the all-absorbing, compelling, and dominating idea which, like Macbeth's ghost, will not down."

Such retrenchment or narrowing of the field of consciousness results in more than mere removal of other conflicting ideas; "the idea attended to becomes intrinsically clearer to the patient at the same time that the other contents of consciousness are blurred and obscured. By the mere fact of attention it is aggrandized in importance and given intensity and vividness." It is through the influence of attention that all higher development is made possible. Fixed ideas and obsessions are merely the morbid manifestations of this faculty; examples of what obtains everywhere in the mental sphere—of variations, not so much in kind as in amount and degree; they are examples of morbid physiology shading off into pathology. When we are confronted with this involuntary dwelling of one's thoughts in a particular direction; when one idea or one emotion among many becomes so intense that attention is drawn exclusively to it and all other ideas or emotions are repressed or inhibited; when we have such marked retraction of the field of consciousness as that evidenced by the occurrence of obsessions, we may know that we have a morbid type of mind to deal with—a mind that "cannot escape from the bondage of its own processes" and, as indicating its peculiar mode of action, is a criterion of its abnormality.

Arising in the most complex intellectual sphere morbid and fixed ideas and obsessions are apt to be the earliest signs of mental abnormality or tendency thereto; they take their coloring from the intellectual life of the individual but—more than this—they serve as indices to the lower emotional tendencies upon which their development is conditioned and which, later, come more prominently into view. These earliest symptoms, however, consisting of ideas and peculiar habits of thought "confided only to the consciousness which experiences them," like subjective symptoms of disease in other bodily organs, become diagnostic data only when divulged to one who is competent to interpret them—the physician. But it rarely happens that even the medical adviser is made acquainted with these most personal experiences until, perhaps, the underlying emotional element is more prominently shown; this heretofore subconscious factor now becoming apparent gives something tangible—something measurable to deal with in the bodily expression of feeling as evidenced in physiognomy, attitude, words, and deeds, or in modifications of circulation, respiration, and the various secretions of the organism made manifest in their totality by the accompanying impairment of nutrition. These become accurate criteria of inner and otherwise hidden mental states, and are of just as great significance in diagnosis as are the physical and chemical modifications of the secretory and other processes going on within glandular organs. As in these latter we may know their results or processes without in all cases being able to separate the products into their ultimate constituents, so with emotions; though we do not yet know all the physical and chemical conditions under which they appear, we can observe the process of their determining attention to a given kind or group of ideas; their vivifying influence upon these; and their tendency, once started, to develop and propagate until all the forces of the organism are diverted to them, proportionately narrowing the field of consciousness and by so much increasing the tendency to resultant action.

It is a law in psychology that the more intense or vivid an idea the greater is its tendency to result in action. We have seen how an idea is vivified by the mere fact of attention. Attention becomes most potent in narrowing the field of consciousness when it is determined or reinforced by emotion; in other words, we see that most vividly (clearly) which arouses emotion or feeling. Because of the very multiplicity of our ideas but few attain degrees of vividness impelling to action because ideas not in keeping with our wishes, desires and inclinations are inhibited or kept in the background of consciousness; such ideas can readily be controlled. Very different is it when our emotions are involved; under these conditions, we have to do with something which most intimately concerns us—our material or social welfare. Emotion and passion—far from being controlled by ideas—not only determine, but control them. It is in this way that grief over the loss of someone near and dear may be the pivot about which all our ideas revolve; indulged to the exclusion of all other emotions, with the concomitant depression of all the vital forces, it can very soon assume morbid proportions, readily labeled as such by the mere fact of its entirely dominating the mental life of the individual.

Fear, suspicion, jealousy and anger, are emotions which readily assume a morbid aspect; they constantly precede, as well as accompany, certain forms of mental disorder; indeed, they furnish the "materials" for their development. I can best illustrate their diagnostic value by the recital of a few exaggerated cases:

Case I.—L. K. W., aged forty-five years, was admitted to the Western Pennsylvania Hospital for the Insane, June 21, 1901. Maternal granduncle and an aunt were insane. The patient has had nervous dyspepsia for years. The earliest signs of mental disorder were observed in June,

1899, two years prior to admission. At first unable to sleep, he next grew timid, and tried to avoid meeting strangers. Becoming fearful that he would lose his position, he soon manifested other fears—apparently the outgrowth of the former; one of these was that his family would come to want. He threatened to kill himself and also his wife and children, but has made no attempt to do so.

Under examination the patient was at first reticent but soon talked quite freely; telling in great detail, how, after months of rapidly failing health from long continued "stomach trouble" he began to feel timid and "afraid." At first vaguely "fearful of everything," he one day, conceived the idea when called on to sign his name in receipt of his week's wages he might forget how to write it. Fully appreciating its unreasonableness, this fear, nevertheless, grew upon him until he decided to quit work in order to spare himself the humiliation which such failure would entail. Unwilling to reveal to any one his reasons for such cowardly behavior, he now worried about the real trouble of curtailed income with its potentialities of poverty and want. Unable to control or modify the original groundless fear, despite its far-reaching consequences, his general state of fear and anxiety became augmented, and other fears developed and multiplied. Vaguely suspicious of all with whom he came in contact, his fears took the more definite form of threatened danger to self, wife, and family. He felt that for some unknown reason, he was followed by officers of the law; that he was accused of committing some crime, hence his threat to kill himself and his family in order to escape ignominy as well as poverty. Ending his story with the statement—"Doctor, you're the only one to whom I've told the fool beginning of this trouble"—he expressed the hope that treatment might help him in the effort to throw off such feelings, and to get well. With improvement in his digestive functions, and, consequently, in general nutrition, encouraging suggestion and employment of such a nature as to keep him continuously occupied, he made a good recovery and continues well up to the present time.

Case II is illustrative of the development of fears, at first slight and transitory, into a settled state of suspicion, fear, and ultimately, into varied delusions of persecution, with transformation into appropriate self-preservative action in the way of attack. J. B., aged sixty years, admitted March 3, 1902. His mother suffered with rheumatism all her life and died of "paralysis." A brother died insane. The patient has had "sciatic rheumatism" off and on for years. He has always been "sensitive and nervous." Seventeen years ago he suffered transitory attacks of fear. At first these were merely in the way of ideas temporarily entertained. After a night marked by terrifying dreams as of being caught and crushed by falling timbers, a sense of fear possessed him. He would feel afraid to cross a bridge or ride in a street car. These apprehensions soon passed, however, and he appeared perfectly well. In September, 1890, he had an attack of "nervous prostration" lasting several weeks. In this he walked the floor constantly, worried incessantly (about his troubles, real and imaginary alike) and, later, grew suspicious of those around him. At one time he refused a certain medicine because "it might poison him." Though apparently recovering from this attack he became at times morose and sullen. Never fond of company he now avoided strangers, and while living, in the main, an apparently normal life, morbid fears frequently beset him, manifested later in attitude, words, and deeds. In 1898 he entertained the idea (though himself a Knight Templar), that "the Masons wanted to put him out of the way." He at this time grew suspicious of his wife and children, and one day accused a daughter of coming into his presence with a concealed knife with which she intended to kill him. In September, 1900, he attempted suicide by cutting his throat, giving as a reason for so doing that "death was to be preferred to his constant torture." In December, 1901, he made an unsuccessful attempt to kill his daughter, afterward stating that a voice had been telling him to do it, and that for a long time he had resisted, but was eventually "compelled to act." In the two or three months intervening between this occurrence and his commitment as an insane patient, he manifested, in addition to his systematized delusions of persecution, innumerable fears, and ideas of suspicion. Every move on the part of those about him had some hidden meaning; a given look influenced his heart, his stomach, or sexual organs; the table and china decorations conveyed to him certain meanings; he was worked upon by electricity, X-rays, etc. These delusions accompanied by an attempt to act upon them together with excessive and almost constant motor agitation led to his committment to Dixmont, where he soon subsided into a quiet and apparently normal state. To the casual observer, he is a harmless, inoffensive and, at times, even interesting and entertaining old gentleman. His delusions of persecution have faded away but examination readily reveals the existence of habitually entertained fears, and obsessions or besetments, all in the key of suspicion and fear.

This case presents, as its earliest psychic symptoms, morbid fears entertained at intervals for years without being divulged to any one. Finally becoming more obtrusive, as well as more continuously entertained, they attract harmonizing ideas, and later, all sensations, both of special sense and organic, are interpreted by the light of such morbid fears and suspicions, progressing to their inevitable outlet in action.

The following case is one which so clearly illustrates progressive mental involvement, with gradual abrogation of the higher inhibitory faculties by reason of the accompanying clouding of consciousness, that I give it in considerable de-

tail. Long continued indulgence in alcohol results in the impairment of the highest intellectual faculties and finally, complete domination by ideas and emotions which are characteristically the result of this toxic agent. In the mechanism of its development it is typical—not only of the class to which it belongs, but of many forms of mental disorder. Viewed in the light of its cause, the earliest manifestation in jealous suspicion is not less significant as a symptom of developing mental disorder than is the latest outcome in attempted deeds of violence.

Case III.—L. J. (colored), aged forty-seven years. Was admitted October 8, 1902. Insane eight weeks before admission, he was confined in jail for ten days because of threatening behavior with a shotgun. He believed that a mob was going to lynch him and said that he was only defending himself from an attack upon his life.

A steady drinker for twenty years, he had shown no mental abnormality except when drunk (and then but the usual evidences of intoxication), until two years ago when he became very jealous of his wife, accusing her, when under the influence of whisky, of unfaithfulness to him. This only when drunk. Two months previous to his commitment, however, he constantly accused her of all sorts of things; he also seemed fearful of every one, and later, declared that certain people of the community intended to lynch him. He armed himself with a shotgun and threatened to kill any one who might approach.

Under examination the patient, in great detail, tells of long-existing deceit on the part of his wife; next of flagrant acts on her part. He then relates the story of an assault by a negro on a little girl in the community which was attributed to him (all imaginary). Detectives now watched his house day and night. He heard voices at every turn telling him to prepare for death. Knowing himself innocent of any crime he determined to sell his life dearly and accordingly made preparations for defense.

Since his admission there has been progressive development of his mental disorder, he spends his entire time talking by "echo-phone" to detectives, county officials, his imaginary accusers, and recently to President Roosevelt, who, he says, has appointed him to some high official position in Washington.

From a mass of available symptoms illustrating the psychic development of this case I give these rather meager details which mark the onset and the progressive involvement of his faculties.

In the expressed ideas of suspicion regarding his wife we have the earliest symptoms of his mental disorder, with accompanying and underlying emotions of jealousy as later evidence of an increasingly narrowed field of consciousness. The corresponding morbid emotions direct his attention to this phase of his conjugal relations, and he reflects upon all actions and words of the suspected wife; these are distorted by his perverted imagination and made to fit in with his suspicions. He sees that which he expects to see and all evidence to the contrary does not exist for him because his consciousness is filled with that which his feelings tell him must be so. Narrowed down to this one idea, with his attention constantly assailed by attitudes, words, and deeds, which (though entirely imaginary) are proofs to him that his suspicions are correct, we see their logical outcome in ensuing acts. He first accuses his wife, then threatens her with violence, which is prevented largely by the accidental shifting of his now multiplying apprehensions and fears to other objects. That the jealous suspicions of his wife were inspired—not by actual deeds on her part, but were entirely the outcome of morbid conditions within the patient's own organism, we have further proof (if such were needed) in the shifting or transference of his suspicions and fears to his less intimate environment. The fear of impending danger, so common in alcoholic cases, he now attributes to accusation of crime, the sexual nature of which is the mark of its being but a continuation and further progression of his earliest morbid ideas. With the increasing clouding consciousness we also see further attempt on his part to explain his emotions of fear and apprehension of danger; this eventuates in delusions. "People are down on him" because of his race. He is accused of a crime (imaginary) common to his race. For twenty years holding the respect of the community in which he lived, he deplores the fact that his previous good record now counts as naught, and he constantly broods upon this thought. With "fear of disesteem" as its origin we observe a progressive narrowing of his field of consciousness to this and harmonizing ideas, all of which are made to fit in with his emotional state, no inconsistent ideas coming to consciousness to counteract them. He is now unable to give events their proper significance or see things in their proper proportions. Sensory impressions are soon misinterpreted. All sounds reaching his auditory centers being transformed (by his imagination) into voices made by a mob gathering to lynch him. Moving shadows are spies and detectives who hound his footsteps. By this time convinced that his fears have foundation in fact he takes necessary steps toward protection from the dangers which threaten his life, and arms himself with a shotgun.

The development of grandiose delusions since admission to the hospital is the logical outcome of his reflecting on the earlier entertained ideas, images, and emotions of fear later evidenced by illusions, hallucinations, and delusions. His morbid reasoning (whether conscious or unconscious) being, in effect, that since he is made the object of so much notice and attention on the part of the world at large he must be a personage of importance; and adequate reasons are evolved by his diseased imagination to explain such persecution. At first falsely accused of crime and hunted by the officers of the law, and later, by the mob, he, for some unknown reason

(so he argues) must be an object of their envy, and reasons for this are gradually evolved in his disordered imagination. He now states that it was all due to the known desire of the President to appoint him chief over all the detectives in the United States. Great wealth and possessions come as the logical sequence of great authority. We thus see this last stage attained by progressive gradations. He, to-day, offers millions upon millions to any one who will release him that he may go about his most important business.

In concluding these superficial and incomplete, though lengthy observations concerning the earliest psychic symptoms of disordered states I would not maintain that defects of judgment, exaggerated emotional states, or impulsive acts always are evidences of mental disorder. My aim has been to indicate how—as products of brain functioning—they may become such, just as the products of other organs through their excess, deficiency, or alteration in constitution, may gradually shade off into pathologic character; and this even in response to their habitual, and normal stimuli: the disproportion between cause and effect, in such cases, is explained by the general condition of the organism, or to a certain disposition and peculiarity of the body cells favoring such change. The cause, in other words, is found in the patient's own organism. In like manner undue intensity (quantity or amount), undue duration,—disproportionate reaction to all causes of mental activity may assume pathologic significance.

We cannot subject the product of brain functioning to chemical and physical tests such as are constantly our measures of accuracy in the diagnosis of diseases of other organs, but we can painstakingly observe these outward indications of hidden mental states, while extending our search for the cause or causes of such deficient, excessive, or perverted reaction—not only to the latest, or apparent, determining cause of idea and emotion (with their motor equivalents), but to the history of the patient's own organism for data pertaining to the evolutionary period of the disease; to previous habits of thinking, feeling and acting—in short, to the mode of reacting to cerebral stimuli, whether general sensory, emotional or ideal. In a disease where the evolutionary period comprises the entire previous life of the patient—as well as the lives of his progenitors—we, as a rule, have little difficulty in obtaining such earlier incidents of history which, as parts of the records of defect, or of exhaustion, stress and strain, reveal peculiarities of the individual brain as a reaction organ and, to this extent, they are facts of clinical importance.

Of well-marked diagnostic significance, it will be seen that they are of even greater importance in their prognostic relations; for, just as the ugly scars and unsightly depressions in scrofulous necks evidence previous tubercular adenitis and the existence of vulnerable tissue with its well-understood and definite relations to pulmonary tuberculosis, so the early morbid activities of mind as revealed in moods, emotions, impulsions and obsessions, are criteria of mental vulnerability or instability. Occurring under adequate cause or as a result of exhaustion, acute disease, or transient toxemia, even in the robust and stable (who promptly recover), they are of vastly greater significance in those less well-endowed by heredity. Such are more apt to succumb—not only to the influence of exceptional upheavals or calamities of acute disease, grief and disappointment, but at those "times of order-making" normally characterized by change in the body's nutritive processes; the times of greatest functional activity therefore of relative stress and strain: I refer to puberty and adolescence, pregnancy, the puerperium and lactation and the menopause. Whenever occurring and whatever the cause the psychical mechanism is much the same for all despite the wide diversity in their manifestations.

The intimate relation existing between impaired nutrition of the nerve cell through exhaustion, intoxication, the toxins of disease, and the various neuroses and psychoses has been well demonstrated and its importance cannot be overrated. But it must be remembered that the human organism is something more than a receptacle or laboratory for the production of various poisons; that there is a mutually acting and interacting influence between the brain and the vegetative and organic functions which minister to its nutrition, growth and activity: The science of medicine, with its correlative branches, deals with the influence of these latter. But psychology has come to the aid of medicine in further elucidating the *manner* of functioning of this most complex organ, showing how impressions received from the external world through the various avenues of special sensation and of all the outlying organs of the body as well, are the "materials" or "ingredients" by which it expands; and also that, while thus developing it not only acquires its own particular manner of responding to stimulation from without, but further reacts upon the organic functions. "Our whole body in every instance resounds in every part to the variations of our brain activity, and the normal functioning of our organism depends in a large degree on the right work of these central stimulations" (Münsterberg).

The majority of all cases of fully developed insanity represent brains defective by heredity and made more so by repeated injury from toxins of chemical or bacterial origin, with inherent defect in associating and combining the ingredients (images) of the mind's growth. Having marked morbidity in their individual system of thought or ideation, the result of long-indulged emotions, it may be, which, however initiated, are later dependent for their continuance upon certain conditions of the organism; they gradually become related to all the mental forces of the individual; with habit stepping in to fix and, ultimately, to organize into a consistent whole such morbid ideas and beliefs, the very origin of which may

be forgotten. As the disorder progresses the higher faculties are bedimmed and clouded; special sense impressions fail of correct interpretation, or rather, are interpreted in the light of the prevailing emotions, and phantoms, or fictitious objects, dependent wholly upon the fancies, fears, and suspicions of the disordered brain which conceives them, are projected into the outer world where, as illusions and hallucinations, they become to the sufferer further proofs of existing cause for said morbid emotions. Thus vivified and accentuated, and with higher inhibitory factors abrogated, they become translated into appropriate deeds upon the slightest, and often quite accidental, determining circumstances. That which at first existed merely as a proneness to a certain mental attitude we constantly see thus transformed into an irresistible tendency evidenced in disordered conduct. This is the essence of insanity.

Our relative helplessness in the presence of fully developed mental disorder is explicable in the light of our knowledge concerning its psychical mechanism. Appreciation of our limitations in psychiatrical practice prevents us from making useless attempt to regenerate the idiot and imbecile; that is, to repair destruction or damage of neural tissue sustained before birth, or before the evolution of the mental faculties in childhood. But at the same time it leads to more painstaking efforts on our part to develop by special education the remaining spark of mental life in those who are thus congenitally defective. It also results in a keener appreciation of the varying degrees of vulnerability, and of the truth in the observation that "the greater the inherited or congenital defect or weakness the more easily does the organism react to the evil influence of a bad environment, and the more hopeless will be the efforts to raise it to the normal."

All available evidence of morbid brain functioning, whether manifested in idea, emotion, or act, becomes of clinical importance, and by so much enables us the better to exercise that highest function of our art—of guiding the vulnerable individual through periods known to be fraught with danger to such an imperfect organism. Revealing "the weak link in life's structural chain" these earliest indications are of the greatest importance from the standpoint of prophylaxis. In the early stage—while the disturbance is "functional"—we may hope to accomplish much through removal of the exciting or determining cause, whether this is exerted through other links, as of overworked or defective organs of special sense—the "tools of the mind"—excessive expenditure of physical or mental energy, emotional stress, or poisons and the toxins of disease known to expend their injurious influence upon the delicate structure of nerve cell. And it is not too much to say that in this stage we can, in many instances, prevent the development into graver mental disturbances, from which they differ, not so much in quality as in degree.

Prevention, which is always paramount to cure, is thus seen to be most important where the psychoses are concerned. Indeed, in a large proportion of cases the one hope lies in prophylaxis, and this is only accomplished by early diagnosis, which depends upon recognition of the abnormal nature of idea, emotion, and impulse, together with a study of the condition of lowered resistance under which they develop. Whatever their origin it is through their interpretation by the light of the laws which govern the mental movements that these earlier slight indications become instinct with meaning to the physician, as well as momentous for the future welfare of the patient.

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THE AMMONIUM SULPHATE METHOD OF STERILIZING CATGUT.

BY WELLER VAN HOOK, M.D.,
OF CHICAGO.

The claims of the Claudius method of catgut sterilization by prolonged immersion in iodine solution, which I tried on account of its simplicity, have not been substantiated in my experience. The catgut has not an agreeable handling quality and often becomes fragile after prolonged storage. Moreover, while we may not doubt the statement of conscientious, trained and able observers that the iodine catgut is sterile, we have a comforting sense of perfect security in using a suture material that has been subjected to the action of boiling water. For these reasons I have returned to the ammonium sulphate process of Elsberg with such satisfaction that I feel it my duty to commend it.

The simplicity and convenience of this method are such that any nurse can carry it out. For more than two years I have employed it with the utmost satisfaction, entrusting the details to the operating-room nurse. A number of my colleagues have successfully used the material prepared under my direction. The method depends upon the principle, as stated by Elsberg (*Centralblatt für Chir.*, 1900, p. 537), that organic substances are insoluble in the fluids by which they are precipitated from their solutions. A saturated solution of ammonium sulphate answers these requirements, and Elsberg has shown that the boiling of catgut and other organic materials in such solutions for a period sufficiently long to insure sterilization does not seriously affect their surgically desirable qualities.

The weakening of catgut by sterilization is of serious import. I have found that slightly chromicizing the material before sterilization prevents it from weakening and softening, and yields a product more easily handled and tied. After exhaustive tests extending over more than two years, the product being used by myself in hundreds of operations at Wesley Hospital, the fol-

lowing routine of selection and preparation is warmly recommended:

At the outset a catgut of unimpeachable quality must be chosen and the surgeon will do well to arrange for a continuous supply of uniformly reliable material. It should not have been weakened by bleaching or polishing. Select raw, rough, unbleached material. Soak for a week in pure ether or a mixture of chloroform one part and ether two parts. Wind on glass spools in single layers. Soak for three days in aqueous solution of chromic acid, 1 to 1,000. Boil for twenty minutes in water to which, while boiling, chemically pure ammonium sulphate has been added until the crystals cease to dissolve. Wash the catgut for half an hour in cold sterile water. Store as desired. I place the spools in a solution of corrosive sublimate, one part in ninety-five per cent. alcohol, one thousand parts. Should the material become infected, it may be reboiled.

A SEVERE CASE OF MAJOR HYSTERIA (TRAUMATIC NEUROSIS) FOLLOWING AN ACCIDENT; RECURRENCE OF SYMPTOMS AFTER A SECOND ACCIDENT; ABSENCE OF DAMAGE CLAIMS IN BOTH INSTANCES.*

BY THEODORE DILLER, M.D.,
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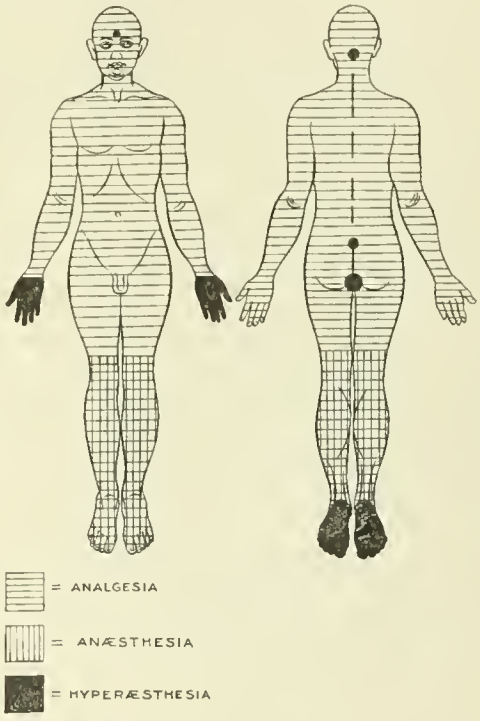
The following case of major hysteria is, I believe, worthy of note for two reasons: First, because of an unusually interesting array of clinical symptoms, among them high fever, subnormal temperature, greatly accelerated respiration rate with practically normal pulse. Second, because the symptoms originally followed and are doubtless to be attributed to an accident, and recurred after a second accident; and because there were no grounds for damage suits, which were not entered.

It is often quite glibly said of a patient suffering from hysteria or neurasthenia (or both) which follows and results from an accident and where damage suits are brought, that the symptoms would not have occurred if there had been no ground for suit, or else that they would have soon subsided and that they will quickly, if not instantly, disappear after damages have been awarded and paid. This attitude, which is common to defending attorneys and to many physicians, does, I believe, a great injustice to many who suffer from hysteria and neurasthenia following an accident.

I think that there can be no doubt whatever that the symptoms of such patients are commonly exaggerated, both consciously and unconsciously, by a pending damage suit; and that improvement is greatly hindered by a pending suit. I further believe that the rate of progress toward recovery is often greatly accelerated by the settlement of a damage claim; although an instance of a complete and instantaneous recovery of which so much is heard, has never come under my observation. The psychology of all this is easily explainable, but need not detain us here.

To illuminate this subject, two sets of observations are badly needed. (1) Of cases of hysteria and neurasthenia resulting from traumatism where no damage claims are made or financial benefits expected to accrue therefrom. (2) Detailed accounts of the post-settlement course of such cases.

The case to be reported is a significant example of the first-named variety of observation. In a later communication I hope to contribute something to the second.



My case is as follows: A single man, a bridge inspector, aged twenty-two years, was admitted to the Allegheny General Hospital on July 14, 1903. Thirty months ago, while serving as a sailor, he sustained a severe fall on a United States vessel, striking on his back across a tense rope. He was rendered unconscious, and remained so for three days. He lay in bed for three months suffering various pains, and with great loss of muscular power in both legs. During this time he suffered from frequent "attacks," each lasting two or three days, when both legs "stiffened out" and the patient became quite helpless. The intervals between the "attacks" were only six or eight hours. Then his legs felt "numb." His left leg was more affected than the right, and was often "stiff and trembling-like." He always felt the "attacks" coming on by beginning stiffness in his legs.

At the end of three months he was removed from bed to a chair. His legs were now no

* Paper read before the Allegheny County Medical Society, Jan. 19, 1904.

longer stiff. Two or three weeks later he was barely able to stand alone. Then he began to walk a little; and nine months after the accident he was able to go around at a "pretty lively gait." He still suffered some pain—in the soles of his feet and in the popliteal spaces and in the left side of his back (probably hyperesthesia). In general, he felt quite well, began work for a railroad as a bridge inspector and continued steadily at this occupation until two months ago.

At this time he met with a second accident, a fall of twenty feet from a bridge. Following this accident he suffered pains in the head, neck and abdomen, small of the back, and in both legs, more in the left than the right. Severe frontal and occipital headaches which were at first marked symptoms, have now considerably abated. Once or twice a day for a period of about thirty minutes his "legs stiffen out."

For a period of six weeks following both these accidents the patient was catheterized. Following the first accident he alleges a bed sore had developed. (?)

Examination, July 16, 1903.—Mental State: Patient is very anxious and apprehensive. He tells his story in a vague, halting and disconnected manner, although he was quite voluble.

Motor System.—The left foot is strongly contracted in a position of talipes equinus. The arch is much increased. Attempts to extend the foot are quite painful and are vigorously resisted. There seems to be much loss of power in the legs, more marked in the left than in the right. There is no apparent atrophy. Much fibrillary twitching develops in the left calf with attempts to extend the foot.

Sensory Functions.—There is universal analgesia, except over the following areas which are intensely hyperesthetic, viz., soles of feet and palms of hands, a spot about the size of a dime just above the root of the nose, a somewhat larger area over the occiput, several areas along the spine with a larger and especially well-marked area over the lower sacrum and coccyx. The lower limbs from a little above the knees downward except over the dorsum of the left foot and over the soles exhibit loss of contact as well as loss of pain sense. (See charts.) Visual fields are both markedly contracted.

Tendon Reflexes.—Both knee-jerks are quick, the left being longer than the right. Babinski toe reflex is absent.

The spine seemed normal; and in other respects the examination was negative. Subsequent examinations showed a good deal of shifting of the areas of anesthesia and hyperesthesia, with a gradual diminution of their extent and intensity. On August 1 pain sense and contact sense seemed nearly normal, the points of hyperesthesia at the root of the nose and over occiput had disappeared and the visual fields were quite normal. Hyperesthesia along spine and in soles of feet and palms was much less in degree. The contracture of the left foot was considerably less marked. In short, the patient had greatly improved in every respect under treatment, the chief features of which were suggestion, isolation, and hydrotherapy. On August 14 the patient, without warning, left the hospital.

Remarks.—It only remains to speak of the temperature, respiration, and pulse. The generally bizarre character of the temperature curve with the wide and sudden variations and the absence of changes in pulse and respiratory rate which would ordinarily correspond to the temperature curve in febrile conditions is the most noteworthy feature. The respiration rate was generally much increased in frequency, ranging most of the time from to 30 to 60. It bore no relationship to the pulse rate. For example on July 26 when the respirations were 60 a minute, the pulse was 66 while the temperature was 107° F. The pulse rate was remarkably steady considering the wide variations in respirations and in the temperature. Most of the time it was between 65 and 75. Rarely did it go below 60 or above 80. The temperature on the other hand ranged from 96° to 109° F.; and the respiration rate from 18 to 60, being much of the time above 40. The respiratory rate gradually subsided as the patient improved.

Without going into tedious detail, it may be stated that careful examination of the thoracic and abdominal viscera were made both by Dr. Ohail and myself to discover if possible any organic disease; for it is of course well known that hysteria may be associated with and indeed spring from organic disease. Our examinations discovered no organic disease.

The case, I believe, can therefore be regarded as a clear one of major hysteria. The permanent stigmata consisting in the contracture of the left foot and the sensory changes named including the greatly restricted visual fields constitute positive evidence of hysteria, from which one can make the diagnosis of this affection with great confidence, and which also gives one a much greater feeling of assurance than is possible in those cases where the evidence is largely or wholly negative in character.

That these marked variations in temperature are possible as symptoms of hysteria is ample evidence that although we regard hysteria as a mental disease it is one which may influence the so-called vegetable functions of the body. The altered pulse and respiration rates illustrate to a degree the same fact.

Note.—January 12, 1904 (five months after he eloped from the hospital), I learn that the patient has not only maintained but continued the improvement made in the hospital.

Sanitary Training School in Manila.—The Board of Health for the Philippine Islands reports the establishment in Manila of a course of instruction for provincial health officers. This course extends over a period of four weeks, is wholly practical, and is intended to remedy deficiencies in sanitary training and induce common methods of executing sanitary work by the various provincial boards of health.

MEDICAL PROGRESS.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

A Macroscopic Test for Leucocytosis.—It is not seldom observed, according to C. Hirsch and E. Stadler (Hoppe-Seyler's Zeitsch., Feb. 20, 1904), that urine containing pus, as soon as it becomes ammoniacal, acquires a slimy or ropy consistency. This fact was applied by Donné in his well-known test for pus in the urine, namely, the addition of concentrated caustic potash solution to the urine and shaking the latter, with the production of a marked viscosity. This test has been modified by J. Müller for the detection of leucocytes in the urine, in the following manner. To 5-10 c.c. of the suspected urine is added, drop by drop, officinal KOH, the mixture being vigorously shaken after each addition. The leucocytes swell up and impart the slimy characteristic to the mixture. If the latter is now shaken and the test-tube is then held quiet, it is noticed that the air bubbles in the ropy solution either rise very slowly or, if the mixture be very viscous, do not rise at all. This reaction is positive in the presence of 1200 leucocytes per cubic millimeter. An excess of KOH is to be avoided, for this dissolves the leucocytes. The author was stimulated to try this test for the detection of leucocytosis in blood, with good results. The blood of a leucemic patient, containing 400,000 leucocytes per cubic millimeter was examined. Twenty c.mm. blood were mixed with 5 c.mm. .9 per cent. salt solution. To this KOH was added drop by drop and the mixture became jelly-like. On shaking, large air-bubbles appeared and these rose very slowly. This phenomenon was obtained in cases of inflammatory leucocytosis, varying from 20,000 to 40,000. In these the results were less exaggerated and of shorter duration. Militating against the practical value of this test is the fact that normal blood with 8,000 to 10,000 leucocytes, acquires under the same treatment a viscous character. In the cases of marked leucemia the enormous gelatinization would serve to indicate a high leucocytosis. The theoretical explanation of this reaction is as follows: According to Kossel in the solution of the nuclei of the leucocytes by the KOH, the nucleoproteid is decomposed into alkali-albumin and the sodium salt of nucleic acid. The latter swells to a jelly. The further addition of KOH, or boiling, causes the formation of nucleic acid B, which no longer gelatinizes.

Is Diphtheria Transmissible by Water?—Having been called on several occasions to determine whether drinking-water was the source of sudden outbreaks of diphtheria, F. Seiler and W. de Stoutz (Rev. Méd. de la Suisse Romande, March 20, 1904) made experiments to find how long the Klebs-Loeffler bacillus would live in water. Having isolated a virulent culture from the throat, they infected 10 c.c. of normal bouillon, and the next day added one drop of this to one liter of distilled water in a sterilized rubber bag, and two drops to three liters in another bag. After thorough shaking, the bags were left at 18° C. for twenty-four hours. Then one drop from each bag was implanted on serum and left in the incubator eighteen to twenty-four hours. Typical colonies resulted and the individual bacteria had the morphology of the Klebs-Loeffler. Every day for nine days a fresh drop was taken from each bag and a culture made of it with positive results. In another series of experiments the water was implanted with a tiny piece of serum culture, and not only did the bacilli remain alive and virulent, but even increased in number from day to day in the distilled water left at ordinary temperature. Larger quantities of water, 10 to 15 liters, were then taken, and in every case the addition of a single drop of bouillon culture was sufficient to give positive cultures for from nine to twelve days, the time during which the tests were continued.

The Bactericidal Reaction in the Blood Serum of Typhoid Cases.—Tests which show that the bactericidal action of the blood serum of typhoid patients afford a more delicate diagnostic measure than agglutination are advocated by R. Stern and W. Korte (Berl. klin. Woch., Feb. 29, 1904). The principles involved in the method are as follows: A quantity of the suspected serum is rendered inactive to 56° C. To this is added a mixture of normal serum, containing the complements, and typhoid bacilli. By constant dilution of the serum to be examined, it is possible to determine the smallest amount which displays any bactericidal action. The serum taken from the patient is heated in a hot water bath to 55° C. in order to render its complement inactive, and then diluted with normal salt solution, 50, 100, or even a greater number of times. A series of test tubes are then filled with ½, ¼, ⅛, etc., of the original dilution together with sufficient saline solution to make 1 c.c. To each tube is then added 0.5 c.cm. of a 1-5,000 twenty-four hour culture in bouillon of typhoid bacilli, and also 0.5 c.cm. of fresh rabbit serum diluted with normal salt solution. Controls are also made on plates. Each of the test tubes then contains 2 c.c. of fluid and the bacilli and also the suspected serum in varying amounts. The tubes are now placed in the incubator and then the contents are planted out on agar plates, after three to four hours. The plates are then placed in the incubator for twelve hours, after which they may be inspected. Or the tubes may be kept in the incubator for eight hours, and conclusions drawn from the presence or absence of any turbidity. The latter method, although more rapid and simpler, is often invalidated by the presence of impurities in the serum. In this manner 32 cases of typhoid were observed and as a control, the serum from 23 patients who had never had typhoid. The reaction was manifested readily with a solution of 1-1,000; in the majority of cases even with 1-50.000 and the highest dilution observed was 1-4,000,000. The tests are especially applicable to those cases where the agglutination test is absent, appears late or can only be elicited with a relatively high concentrated serum, so that some doubt exists whether it is really produced by a typhoid infection.

The Aceton-content of the Organs in Cases Dead from Diabetic Coma.—The relation of aceton to diabetic coma has never been clearly defined. H. C. Geelmuyden (Hoppe-Seyler's Zeitsch., Feb. 20, 1904) finds that the organs of diabetics contain much more aceton than the corresponding organs of normal individuals. In both cases the liver has the smallest content in aceton. In diabetics the urine may contain more aceton than the blood. In attempting to explain the origin of pathological secretory products belonging to an intermediate metabolism, the author considers three possibilities: Either the substances in question are not produced in the normal organism, in which case they are the result of a perverse metabolism or else they are formed in the normal organism. In the latter case they are either formed in small amount, and appear in the excreta in larger amounts only as the result of an exaggerated physiological process; or they may be normally produced in large amount, only to be transformed into other substances. If by virtue of a diminished oxidation this transformation does not take place, then the original substances appear in the excreta. It is found that oxybutyric acid and diacetic acid are in-

termediate metabolic products, which are normally formed in the body in large amount, to be transformed into other substances under the influence of normal nutrition and metabolism. The author believes that carbohydrates and aceton-bodies are united together in the intermediate metabolism by means of a synthesis, which is necessary for the further transformation of the aceton-bodies. The absence or incompleteness of this synthesis leads to an accumulation of aceton with its consequent elimination from the organism. The possibility of this synthesis is supported by the fact that normally glycuronic acid, a carbohydrate derivative, unites with aceton.

Development of Hemolymph Nodes in Adipose Tissue.—Extensive experimental investigations conducted by A. S. Warthin (Proc. of Path. Soc. of Phila., Dec., 1903) prove that the histogenetic relations existing between lymphoid and adipose tissue are so close that a transformation of either one into the other may occur. A cyclia alternation between lymphoid and adipose tissue occurs throughout life. In old age the development of lymphoid tissue is lessened or comes to a standstill and the existing lymphoid structures undergo fatty atrophy and fatty metaplasia. In embryonic development of the formation of lymphoid tissue may be coincident with or follow the development of the primitive fat tissue. Not all lymph-nodes, however, pass through the stage of the primitive fat organ; the majority probably develop directly from the mesenchymal organs. A transformation of fat lobules into hemolymph nodes occurs in the human fetus. Under pathological conditions the development of hemolymph and ordinary lymph-nodes in adipose tissue may be greatly increased and such structures may be formed in regions where normally they are not found. The relationship between hemolymph and adipose tissue is more intimate than between the latter and ordinary lymph tissue. An analogy of the process is seen in the lymphoid transformation of the fatty marrow occurring in anemia and leukemia. In some of the lower vertebrates the close relationship between the hemolymph nodes and adipose tissue is seen in the persistence of adipose tissue of a fetal type (the so-called hibernating gland). Evidences of hemolysis and elaboration of blood-pigment are found in the fat cells as well as in the endothelium of this tissue, so that it may be regarded as a more primitive form of hemal organ than the hemolymph node, differing from the latter in the absence of lymphoid cells and the non-development of blood-sinuses. The steps of the development of the nodes in fat are as follows: (1) A dilatation of the capillaries of small fat lobules, the first stage resembling an angiectatic fat lobule. (2) A removal of the fat from the cells, immediately along the dilated capillaries and their conversion into reticular cells. (3) An infiltration or development of lymphoid cells in the meshes of the reticulum along the dilated capillaries, and an extension of the lymphoid cells between the neighboring fat cells. (4) Through the atrophy of the intervening fat cells and the confluence of portions of the dilated capillaries, blood sinuses are eventually formed. The reticulum traversing these may be derived from the original fat cells or arise through a proliferation of the endothelium and reticulum bordering upon the capillary. (5) Lastly, the fat is removed from the reticulum, the latter is uniformly infiltrated with lymphoid cells, the blood sinuses are still further developed and the characteristic structure of a hemolymph node is obtained.

The Capsule of Anthrax Bacilli.—An excellent stain for bringing out the capsule which surrounds anthrax bacilli, according to L. Heim (Münch. med. Woch., March 8, 1904), is methylene blue containing a sufficiently large amount of the red substance which develops with age after the addition of some alkali. The bacilli will appear blue, the capsule pink, but great care must be employed not to wash too long in water since the capsule consists chiefly of mucin and will readily dissolve out. The stain may be considered a specific reagent for mucin and will work equally well with other capsule-bacteria. Most pathogenic bacteria only possess a capsule in the animal body or if grown on blood-serum; this seems to protect them against the disintegrating powers of the blood. Occasionally the same pink substance is found in the endothelial cells of the heart and vessels of animals experimentally infected with anthrax; this is solely due to a saturation of the cells with mucin excreted by the bacteria.

Splenomegaly.—A great deal has recently been published bearing on the various forms of splenic enlargement. From the unknown Banti's disease to the well-known enlargements due to malaria and other thoroughly well understood factors, one reaches a middle ground in which the splenic enlargement is dependent upon the anomalous types of Indian fever. Presumably all of these are of plasmodium origin, but little definite is known about them. W. B. Leishman (Brit. Med. Jour., Feb. 6, 1904) states that Bently asserts that he has found the parasites described by the author in the previous communication in cases of kala-azar. Donovan has found the parasite in 16 cases, Low in two cases and Marchand has reported their occurring in a German soldier recently home from Pekin. These parasitic bodies closely resemble a form of protozoon described by J. H. Wright in the case of Delhi sore. There is no doubt in the mind of the author that they are either identical with or closely analogous to the parasitic bodies now being found in tropical splenomegaly. Wright has no doubt as to the parasitic nature of these bodies and proposes for them a new genus and species. Ross has frequently found in the pus of Delhi sores large numbers of flagellated organisms. It is possible that these may prove to be an altered form of Wright's new genus. The frequency of these sores in India and their superficial nature should facilitate the confirmation of Wright's work. Lavaran and Ross have disagreed as to the nature of these parasites. The former in his most recent publication adheres to his original view that they represent a new species of the genus *Piroplasma*. The author believes that these bodies represent an involuted stage of a flagellate organism. Certainly the failure in all cases to detect the parasites in the peripheral blood is a strong argument against their being intracorpuscular.

The Protective Function of the Greater Omentum.—It is an old idea that the greater omentum plays a protective rôle with regard to the peritoneum. R. Pirone (Arch. Ital. de Biol., Jan. 30, 1904) conducted a series of researches to determine the following questions: the details of the protective function and whether, if the blood-supply of the spleen be cut off by ligature, and if this organ be surrounded by the greater omentum, whether the latter will form a conjunctival sac around the spleen renewing its blood-supply or whether it will assist in the destruction of this organ. On practising ligature of the splenic artery on cats and rabbits, the author noticed a few days after the operation, that the greater omentum had already surrounded the spleen completely isolating it from the peritoneal cavity. The omentum shows merely a hyperemia, and in spite of the presence of a fibrinous exudation, it does not adhere to the surface of the spleen. At the end of the first week adhesion occurs, a non-detachable capsule being formed, masses of fat appearing on its surface, and the omentum of which it consists being thickened and opaque. One

week later this capsule is complete, fibrous and very adherent. The rest of the peritoneum is unchanged. There is thus observed in the case of the greater omentum, that "intelligent mobility," as it has been called, which in certain conditions serves as an efficient protective organ for the general peritoneum and the organs which it surrounds. Extirpation of the spleen is not followed by any macroscopic changes in the omentum. The author studied the histological changes occurring in the omentum encapsulating the spleen undergoing necrosis as the result of ligature of its vessels. There is from the beginning an immediate emigration of leucocytes, mostly polynuclear, which gather in the vascular spaces of the omentum, or else fill the space between the omentum and the spleen; some penetrate the capsule of the spleen. At the same time there occurs in the omentum a process which continues until the end, namely, a very active multiplication of either the vascular cells in the wall of the serous membrane or of the endothelial cells which line it. At the same time there is also a new formation of blood vessels, which little by little penetrate the capsule of the spleen. On the other hand the new endothelial cells detach themselves from the newly formed tissue, and undergoing marked intracellular changes, are transformed into macrophagocytes, which act as such. These are soon found filled with the cellular detritus of the necrosing spleen, broken-down nuclei, red corpuscles, granules of hematoidin, etc. This represents the culmination of the process which gradually subsides, and a little later (the third week in the rabbits), the necrotic tissue of the spleen has been replaced by an omental cicatrix. The omentum thus serves two functions: the plastic character of its vascular and endothelial tissues enables it not only to act the part of a scavenger in removing the dead splenic substance, but also to shield the peritoneal cavity and thereby the entire organism.

Influence of Alcohol on Resistance to Infection.—This subject has been studied by a number of observers, whose conclusions are based rather on the results of inoculations than on the actual conditions of the immunity present under the altered circumstances and do not give any information as to the manner in which the alcohol influences the specific reactionary changes in the blood. E. FRIEDBERGER (Berl. klin. Woch., March 7, 1904) in a recent investigation endeavored to find what effect the more or less continued administration of alcohol had on the production of the specific protective substances in the blood of rabbits inoculated with cholera. He found that when he gave an intoxicating dose of alcohol at the same time that the immunizing against cholera was done, the formation of the antibodies was increased on the average about 2.5 times when compared with the control animals. This seems to corroborate the clinical experience that in infectious diseases, especially in the early stages, the administration of alcohol has a decided beneficial influence on the course of the disease. It was also demonstrated that when the alcohol was given for a considerable time, the same values were reduced about 16 times as compared with the control animal. This also corresponds with the experience that during epidemics, alcoholic subjects succumb much more readily than other persons.

Distribution of Bacillus Coli in Nature.—Very little is known about this important subject. J. W. H. EYRE (Lancet, March 5, 1904) calls attention to the fact that based on the supposition that this bacillus was indigenous to the human gut, bacteriologists have long been in the habit of using it as a guide in determining the presence or absence of infection by human excreta. In order to eliminate those bacteria allied with the *Bacillus coli*, which are sometimes referred to as "coliform" and to make his report of very definite value, all bacilli not presenting the following characteristics were eliminated: Short bacillus with rounded ends; feeble motility; decolorized by gram producing acid reaction on milk; producing indol in peptone; water within three days; fermenting dextrose; lactose; maltose, saccharose mannite; glycerin; inulin; and dextrin with production of acid in gas; reducing nitrates to nitrites and forming a moist brown growth upon the potato. Despite this very close method of circumscription, the author had no difficulty in isolating large numbers of *Bacillus coli* from the intestines of the small rodents of the laboratory, also from the cat and dog. Positive results were also obtained from the sheep, goat, horse and cow. Specimens of the ordinary fowl, duck, pigeon and sparrow also yielded abundant colon bacilli. It is important that the examination should be made as soon after death as possible. Two seabirds killed three miles from land were found to harbor great quantities of these organisms. Similarly fish caught at a distance two miles from land and including many varieties all contained this germ. These findings are of very great importance in view of the modern attitude which is that the presence of *Bacillus coli communis* is pathognomonic of infection by human excrement.

Caffeine and Bacteriology.—Certain distinct uses of caffeine as an aid in bacterial diagnosis are suggested by J. COURMONT and L. LACOMME (Jour. de Physiol., March 15, 1904). Caffeine is bactericidal to many germs. The addition of this substance to the extent of one per cent. to the bouillon culture, prevents the vegetation of the colon bacillus without affecting the greater number of bacillus of Eberth. Certain bacilli of Eberth, having vegetated a long time in the laboratory, or having been recently removed from the blood of typhoid patients, are still more sensitive to the action of caffeine than the colon bacillus. The bacilli from the blood of a typhoid patient cannot vegetate in a caffeinated bouillon, while those from the urine of the same patient are not affected. This substance is mainly interesting as furnishing for the first time a bactericidal medium for the colon bacillus which will not affect certain bacilli of Eberth. It is valuable, therefore, from the standpoint of differential diagnosis. It cannot serve as a means of the diagnosis of typhoid, for the feces in the presence of the caffeinated media, presents no bacilli of Eberth.

Studies in Pneumonia and Pneumococcus Infections.—With improved technic, and using for inoculation large quantities of blood, according to E. C. ROSENOW (Jour. of Infect. Dis., March 19, 1904) the pneumococcus can be recovered in practically all cases of croupous pneumonia, and in obscure cases of pneumococcus infection blood cultures may be a diagnostic method of positive value. Pneumococcemia in pneumonia does not mean an especially unfavorable prognosis and is to be regarded here, as in subcutaneous pneumococcus infections of the rabbit, not as an especially ominous or agonal process, but rather as an integral part of the infection. There seems to be a diminution, either in the number or viability, or both, of the pneumococci in the blood at the time of crisis. The number of leucocytes in pneumonia in man and the pneumococcus infection of rabbits is an index to the degree of resistance, and the leucocytes probably constitute an important factor in combating the infection. This supports clinical observation. The hypoleucocytosis developing upon a previous hyperleucocytosis during the course of many fatal cases of pneumonia cannot be looked upon as due to the entrance of the pneumococcus cells into the blood stream, but probably as

the result of an exhaustion of the resisting powers. The leucocytosis may be incited, in part at least, by soluble substances liberated by pneumococci. It was not possible to establish any appreciable difference in the degree of virulence of the pneumococcus isolated early or late in the course of the disease, or in the fatal or non-fatal cases. Fresh normal and pneumonic blood and serum have no bactericidal influence upon the pneumococcus. Whatever other differences they may have, so far as this point goes, the serum of pneumonia patients behaves exactly as does normal serum. The interesting question whether lobar pneumonia is the primary result of a direct local infection of the lung, or a secondary localization of a primary blood invasion, is as yet hardly ripe for final discussion, but that the latter does occur, at least in some cases, is not altogether unlikely. The production of acids by pneumococci in pneumonic serum suggests that some of the toxic symptoms of pneumonia may be due to acid intoxication.

Improved Technic of Agglutination Test in Typhoid.—The method devised by Pröscher for performing this test with a twenty-four-hour bouillon culture of *Bacillus typhosus* which has been killed with formalin, has been tested by E. H. Ruediger (Jour. of Infectious Diseases, March 19, 1904) with successful results. The value of this test rests on the fact that the serum test may be applied without the use of a microscope, and merely by the use of stock cultures of typhoid bacilli killed by formalin, and a few test tubes. The technic is as follows: Inoculate a large quantity of plain bouillon (100—1,000 c.c.) with *Bacillus typhosus*, incubate at 36° C. for twenty-four hours, and add 1 c.c. formalin for every 100 c.c. of bouillon. The culture is now ready for future use, except that it must be shaken before it is used, because the dead organisms gradually settle to the bottom. A culture prepared in this manner is always ready for use, and can be kept at the room temperature for many months. With a lancet or some other sharp instrument prick the lobe of the ear or the finger tip (preferably the former) and collect four drops of blood in a small test-tube or vial containing 2 c.c. of a 1:500 solution of formalin in distilled water. Laking is soon complete, making a clear solution of approximately 1:10 to 1 c.c. of the blood solution add 4 c.c. of the dead culture, making a dilution of about 1:50, and set the tube aside. Make a control tube by mixing 1 c.c. of a 1:10 solution of normal blood, or 1 c.c. of distilled water, with 4 c.c. of the culture, and set it aside. If agglutination takes place, the dead organisms collect in clumps, and within an hour or two are seen as a flocculent precipitate settling toward the bottom, leaving the bouillon clear at the end of twelve to twenty-four hours. Dried blood may be used instead of fresh. On a glass slide collect four drops of blood, spread it and allow it to dry. When wanted for use, dissolve it in 2 c.c. of distilled water and proceed as directed above. The method is suggested as suitable for hospitals, boards of health and private practice.

Lymphatic Varices of the Small Intestine.—Frequently found in the mucosa of the digestive tract, particularly that of the jejunum, according to M. Letulle (Jour. de Physiol., March 15, 1904) is a lesion characterized by a varicosity of the lymphatics. The cause of this condition is an obstacle to the flow of lymph consisting in an obliterating endolymphitis affecting the wall of the tributary lacteal of the region affected. The coincidence of this lesion with chronic atrophic nephritis suggests a general cause capable of producing multiple or general lesions. Among the antecedents of those affected with this condition, syphilis is frequently found.

Corset Cancer.—It has long been a recognized fact that small but acute injuries are prone to develop tuberculosis while those of a similar degree, but more chronic in their infliction tend to the production of malignant change. R. Clement Lucas (Lancet, April 2, 1904) states that he has demonstrated a site of origin of cancer dependent upon the friction of the upper edge of the corset, where it crosses the anterior fold of the axilla. Whether carcinoma is produced directly by chronic irritation, or whether such irritation rubs in an organism from without is in the nature of things purely hypothetical. The rubbing in of pus-producing organisms at the back of the neck by the collar button is a well-known fact which may justly give credence to the corset theory. The author considers the possibilities of infection and contagion, attempting to show that syphilis, which produces injurious effects in numerous situations, may often be shown to be the forerunner of carcinoma. The infectiousness of carcinoma was deduced from the author's original observation of three persons suffering from carcinoma at the same time in the same house, published in 1887.

Steatogenesis in the Organs Produced Experimentally.—Very interesting results in the production of fatty changes in the various organs were obtained by C. Mavrakis (Archiv f. Anat. u. Physiol., Feb. 24, 1904). He found that removal of the thyroid gland produces a steatogenesis. Toxins (diphtheritic and typhoid) injected locally into organs whose circulation has been cut off by ligature of the arteries, produce fatty degeneration. A more intense steatogenesis is the result of repeated injections of phosphorus into organs similarly treated. The fat thus formed is produced by the metamorphosis of the cellular protoplasm, and not by the deposition of fat from other quarters. The greater part of the fat formed during fatty degeneration comes from the albumin of the cell.

Diagnosis of Empyema in Infancy.—That the physical signs of pleural effusion, especially if purulent, differ materially from those in adults, is the experience of J. L. Morse (Am. Med., March 12, 1904). He states that unless these differences are kept constantly in mind, and the diagnosis based on them rather than on unusual signs of adult life, mistakes will constantly occur. Morse sums up the question as follows: Metapneumonic empyema usually develops during the last days of a pneumonia or during the first days after the crisis, but in rare instances may develop during the early days or during the convalescence. Persistence of the fever and other symptoms after the time of the expected crisis or their recurrence after the crisis, should always suggest the possibility of an empyema. There is nothing characteristic about the symptoms, which are those of any severe pulmonary affection. Rapid emaciation and progressive pallor are the most common symptoms in neglected cases, while chills and sweating are unusual. Enlargement of the affected side as a whole is more common than flattening or bulging of the intercostal spaces. The most characteristic sign of effusion is a marked sense of resistance on the affected side. Next in importance is displacement of the heart, which almost always occurs. These two signs justify the diagnosis, even if all the other physical signs are inconsistent. Dulness or flatness is almost always present but may be replaced by tympany. Respiration is unusually bronchial or bronchovesicular and diminished in intensity. Loud bronchial respiration is not uncommon, however, even with large effusions, and counts very little if at all, against the presence of fluid. He also finds that the vocal fremitus is difficult to determine.

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SATURDAY, MAY 14, 1904.

THE ASSOCIATION OF AMERICAN PHYSICIANS.

The nineteenth annual meeting of the Association of American Physicians, held at Washington during the past week, the proceedings of which will be found on p. 949 of this week's Medical News, proved as ever the most interesting medical event of the year. There was the usual full attendance and that lively discussion of papers of practical import which has always characterized the meetings. The most interesting feature of the program is, that while there are no symposia announced, the discussions on the papers resolve themselves into this method of treatment, with the conventional and merely academic material left out. Special emphasis is always laid on the suggestive experiences gleaned from actual practice.

On the first day the papers on Polyuria in Typhoid Fever and the occurrence of Venous Thrombosis as a complication and sequela of that disease brought out important details with regard even to the treatment of the affection. The use of copious water drinking and its effect upon elimination of toxic material through the diuresis produced with the advisability of keeping the urine of typhoid fever patients reasonably plentiful was dwelt on. The amount of urine passed, where the patient is allowed an unlimited supply of water, may be quite surprising. With a reservoir of cool, fresh water beside the bed, connected with a tube in such a way that the patient can always take as much water and as frequently as he wishes without disturbing himself or others, gallons of water are consumed and the patient may pass as high as 400 to 500 ounces of urine. The results of such abundant flushing out of the intestinal and urinary tracts, indeed of the whole system, seems to have excellent results in the prevention of restlessness and other toxemic symptoms.

Dr. Cabot's report of negative results on blood pressure with comparatively large daily doses of strychnine, from one-eighth grain to one sixth grain, will be of interest to the many practitioners throughout the country who are accustomed to depend on strychnine as one of the most helpful of stimulants. While patients suffering from fever under such gentle emotions as those due to the visit of a friend or the coming of the dinner tray, or even some change of position, exhibited marked variations of blood pressure, which could be readily observed, no change occurred after strychnine. Dr. Hare emphasized the demonstration as to the lack of stimulant qualities of strychnine in the ordinary sense of the word. The effect of the drug is really one of irritation of the nervous system rather than any direct action upon the heart, though this is the theory on which the drug is usually employed. The most surprising feature of the discussion is Dr. Cabot's announcement that after strychnine had been administered in doses up to one-sixth grain in twenty-four hours for many days the sudden cutting off of the drug produced no effect upon the patients.

The occurrence in epidemic form of cerebrospinal meningitis in many places throughout the country makes Dr. Koplik's contribution to this subject, which will appear in full in a subsequent issue of the Medical News, of special interest. The points of differential diagnosis between this disease and tuberculous meningitis were well brought out. It is extremely important that sporadic cases secure early recognition and thus facilitate the early employment of prophylactic measures so as to prevent, as far as possible, the spread of the disease. That it is contagious there can be no doubt, though the method of distribution is unknown. The most important differential sign is the occurrence of optic papillitis, so common in tuberculous meningitis, but absent almost without exception in epidemic cerebrospinal fever.

Babinski's toe reflex is usually absent in tuberculous meningitis though commonly present in cerebrospinal. The occurrence of other cases of the disease and the suspicion of all cases showing meningitic symptoms that must be aroused in all physicians' minds at this time, will lead to the recognition of the disease.

Prof. Osler's suggestion that soldiers returning from the Philippines suffering from anemia will, in some cases at least, show the presence of the parasite described by Donovan and Leischman, which is evidently of protozoic character, should lead physicians who have such cases under their care, to look up the characteristics of the parasite. The clinical symptoms present in these cases are a decided persistent anemia accompanied by some digestive disturbances and an enlarged spleen. The affection represents doubtless another of those peculiar splenomegalic conditions which, when they develop as a result of residence in a tropical and especially malarial country, were uniformly set down as malarial in origin but which recent investigations have shown to be due to a series of pathological conditions consequent on the presence of peculiar parasites usually of protozoic nature.

The suggestion of the retiring president, Dr. Councilman, to increase the unefulness of the Association of American Physicians by making honorary members of all those who have been twenty years in the organization, which will celebrate its twentieth anniversary next year, allowing them to retain their privileges to present papers and take part in discussions but making room, even with the strict limitation of membership for younger and more active investigators, seems eminently calculated to keep for the Association the exclusiveness that has made membership a prize, at the same time secure the excellent purpose of continuous rejuvenescence. In this way the Association will retain that conservatively progressive character which has deservedly made it such a force in American life during the past score of years and will assure its own future from the inevitable tendency to sclerosis of interests that a large membership of older men might bring with it.

IMMUNITY TO RATTLESNAKE POISON.

Many years ago, when it was a novel duality for a physician to be a literary man, Oliver Wendell Holmes hinted at the possibility of immunity from rattlesnake poison in his fascinating novel "Elsie Venner." Dr. S. Weir Mitchell had published a monograph on snake poisons and Dr. Holmes' hero, who wrote his thesis on Some Unresolved Nebulæ of Medical Science, may well have taken his hint from this early study by the Philadelphian.

One of the most interesting and at the same time suggestive communications made at the recent meeting of the Association of American Physicians, was announced by Dr. S. Weir Mitchell in a letter from Dr. Noguchi, now pursuing investigations in the Institute for Serum Therapy of Copenhagen.

It may be recalled that this brilliant Japanese student was selected by the trustees of the Carnegie Research Fund to carry on special work and that following his preliminary studies with Dr. Flexner he has devoted himself more particularly to the investigation of the venom of the rattlesnake (*Crotalus*) and to the problem of the production of an immunizing serum for this venom.

In this preliminary communication, read by Dr. Mitchell, he announces his belief that he has finally obtained an efficient anticrotalic serum which promises much for human therapeutics. He writes that he has determined the minimum lethal dose of pure dried *Crotalus* venom to be .0005 mg. for 250 gms. of guinea-pig when injected intraperitoneally, and that after five months steady application he has been able to develop in the blood of the goat an anticrotalic serum which in doses of 2.5 c.c., when injected simultaneously with the snake venom, will protect the guinea-pig from twelve times the minimum lethal dose. If the antidotal serum is injected one hour after the receipt of the venom, the same amount will counteract five minimum lethal doses, and that after a period of three hours, which period he has found represents the time of maximum effect, 4 c.c. of anticrotalic serum will save the animal. Inasmuch as subcutaneous injections of venom, the analogue of the actual snake bite, are one-half as toxic as intraperitoneal applications, Noguchi views the therapeutic application of his anticrotalic serum in a distinctively hopeful light.

The anticrotalic serum that he has elaborated he believes is specific. At the same time he has had occasion to test Calmette's cobra antivenene, which, it will be remembered, that investigator claims is useful in antidoting not only cobra venom, but other venoms as well. In his investigations Noguchi believes he has demonstrated that Calmette's serum is certainly not of any

value in *Crotalus* poisoning and he casts grave doubt on its value even in cobra poisoning.

Should subsequent study substantiate Noguchi's claims there will be brought to successful fruition a long line of researches which have been initiated, fostered and finally announced as completed by our venerable Nestor of American Physicians, S. Weir Mitchell.

GASTRIC DILATATION AND TETANY.

Subjects which are relatively rare of occurrence are necessarily put on the shelf while others more frequently brought to the notice of the practitioner of medicine and of surgery are exploited and placed upon a firm basis of clinical entity. The subject of tetany has long been among those whose fate it has been to be side-tracked, and it is only in recent times that any persistent efforts have been made to understand this symptom or this disease whichever it may prove to be.

It is true that Kussmaul, so far back as 1869, recorded observations made on the form of tetany which he believed to be connected with gastric dilatation. Later on, Trevelyan, Bouveret and others conducted experiments on this rather complex train of symptoms, but all in all, the subject has been relatively neglected.

Osler recognizes a large number of forms, prominent among which are epidemic or, as it is sometimes called, rheumatic tetany. Trousseau mentions a form of tetany associated with debility following lactation and chronic diarrhea. He called it "nurses' contracture." It may be a sequel of thyroidectomy. "True tetany," Osler continues, "in this country, is extremely rare, seventy-two cases only having been collected." Lastly, he states, "There is a form of tetany which is associated with dilatation of the stomach, particularly after the organ has been washed out. The nature of the disease is unknown; certain forms depend undoubtedly on loss of the function of the thyroid gland." In his classic description of dilatation of the stomach, Osler says: "A very remarkable symptom, which occurs occasionally, is tetany, first described by Kussmaul." It is thus seen that our recognized medical authority is confessedly in the dark as to the etiology and the treatment of tetany in general and particularly of the form which arises from gastric dilatation.

That the entire subject of tetany has not received the attention which recent observations might seem to show it to deserve is to be found in the fact that it has received no place whatsoever in the index of Park's Surgery. Rose and Carless, in their Manual of Surgery, make no mention whatsoever of the only form which recent surgical advance seems to place in the realm of diseases curable by operative intervention.

Holt gives the subject a rather wide consideration. He says that it is rare, stating that he commonly sees about five cases a year. He thinks that it occasionally occurs as a primary disease, being frequently associated with rickets, chronic diarrhea, or marasmus. The most frequent exciting cause, he ascribes to some irritation of the gastro-enteric tract. This is the only suggestion or hint thrown out by this author that the stomach may, under certain conditions, be the exciting factor. He did not, at the time of writing, consider it of sufficient importance to give it special mention.

It has recently been shown at the Surgical Laboratory of Columbia that obstruction to the gut at or near the pylorus will, in the case of dogs, result in their death with tetanoid symptoms, which develop in from twenty-four to thirty-six hours. It is stated on very good authority that a cord can be tied around the gut of a dog tight enough to occlude the opening, not alone without causing death, but apparently without giving the animal the least inconvenience, if such cord be tied at some point well below the pylorus. Such a suture will not only not result in tetany, but will actually be passed with the feces after a short time, and the point of its insertion will be indistinguishable from the rest of the gut. The exact location in the gut where such obliteration will cause tetany has not yet been definitely determined.

In view of the awakening interest in the matter of gastric dilatation and other lesions, an article contributed by John H. Cunningham, Jr., in the April *Annals of Surgery*, is of more than timely interest. He writes that the symptom, tetany dependent upon gastric dilatation, and known as gastric tetany, is to be differentiated from the tetanic spasms occurring in gastro-enteritis, pregnancy, thyroidectomy, the puerperal state, acute fevers, carpopedal spasms, and from those produced by toxic substances and diseases of the central and peripheral nervous system. Gastric tetany is usually dependent upon pyloric stenosis and associated stasis and hyperchlorhydria. The stenosis is usually benign, the result of ulceration, or, as is often the case with such cicatrices, it may have passed over into a malignant condition.

The first symptom of tetany usually consists of a pricking and numbness in the hand. There is no definite sign by which this special form of tetany differs from other varieties, and the symptoms are in general well known. Bouveret and Devic are reported to have succeeded in isolating a substance soluble in alcohol which seemed closely allied to syntonin in three cases of tetany with gastric dilatation. When injected into the circulation of animals, this product induced general convulsions. Other experimenters have, however, failed to reproduce these findings. Albuminuria has usually been reported in cases of gastric tetany, although there are no recorded post-mortem evidences of renal involvement, and albumin has not been unknown in other forms of tetany.

The prognosis, as given uniformly by authors the world over, is startlingly high, the mortality rate being about 88 per cent.

Until recent years the treatment has been almost entirely medical in all reported cases of gastric tetany. After a careful search of the surgical literature on the subject, Cunningham finds that the operative treatment shows a mortality of only 37.5 per cent. Medical treatment can be briefly summed up in the aphorism, "Nurse, feed and stimulate," to which may be added free lavage of the stomach.

The surgical treatment consists in the simple performance of gastro-enterostomy. Why some cases—an unknown but small percentage of the large number known to be suffering from gastric dilatation—should develop tetany is far beyond our present knowledge. The cause is not the degree of the dilatation or the extent of pyloric obstruction, or the food consumed. Neither has it been shown to be due to the presence of any unusual organism within the dilated organ,—it is one of the enigmas remaining to be solved.

If, however, our appetite for academic demonstrations and proofs in this matter has not yet been satisfied, there is much material of a practical nature to be gleaned from such papers as the one under discussion. From the remarkable history of the case cited by the author, it is evident that the man passed through a great many general hospitals in various eastern cities of the United States; that he was seen by many able medical consultants; that their treatment consisted in rest and lavage; that he became progressively worse; that had the medical treatment continued, he would unquestionably have died. This, rather than the problem as to the presence of some unusual substance in the decomposing material of the stomach, is of interest to the general practitioner. The question which arises in his mind is, What is to be done with cases of tetany which are shown to be due to gastric dilatation?

There is abundant evidence to demonstrate that under medical treatment three-quarters of them will die,—a large percentage from suffocation. Under surgical treatment, somewhat less than one-third perish, and by a relatively painless death. When methods for performing gastro-enterostomy or some other adequate means of drainage are perfected, as they will be within the next ten years, this percentage may be more than cut in two. Indeed, it is conservatively high for the present status of the operation, from ten to fifteen per cent. being claimed by many operators.

ECHOES AND NEWS.

NEW YORK.

Danger in Salads.—At the annual dinner of the Faculty of the New York Polyclinic, given on Monday evening, May 9, Professor Morris Manges, in discussing the question of the contamination of oysters with typhoid germs, said, "There is danger that in reviling the oyster we may overlook greater dangers of infection. Housewives should see to it that celery and salads are carefully washed before they are served."

Hospital Positions.—Graduates in medicine who desire to substitute for members of the house staffs of Bellevue, Gouverneur, Harlem and Fordham hospitals, absent on leave, may apply with credentials giving time and place of graduation, hospital experience and references, to the Superintendent of Bellevue Hospital, First avenue and East Twenty-sixth street.

Progress of the Joint Committee for Consolidation.—At a meeting of the Joint Committee of Conference held at the New York Academy of Medicine, May 6, 1904, the following resolutions were passed:

Resolved, That the President and the Secretary of the Joint Committee of Conference, be authorized and directed to make a certificate provided for in the tenth paragraph of the agreement, and the Counsel of the Committee be directed to proceed with diligence to obtain a final order for the consolidation of the corporations, pursuant to the terms of the agreement, and that the form of the certificate to be made by the Chairman and the Secretary, be in the form of the draft certificate submitted to this Committee, which is as follows:

"Supreme Court, New York County.—In the matter of the application of the Medical Society of the State of New York, and the New York State Medical Association, for an order consolidating the said corporations, pursuant to the Act, Chapter 1, of the Laws of 1904.

"This is to certify that the Joint Committee of Conference mentioned in the agreement for the consolidation of the Medical Society of the State of New York and The New York State Medical Association, which agreement was unanimously adopted by the Medical Society of the State of New York, at its annual meeting at Albany, on January 26, 1904, and by The New York State Medical Association at a special meeting of the Association held in New York, on March 21, 1904, has not ordered the submission of said agreement or of any questions in connection therewith, to the County Medical

Societies or Associations, referred to in said agreement, and that the conditions precedent to an application to the Court for an order consolidating the Medical Society of the State of New York and The New York State Medical Association have been fully complied with; and this certificate is made pursuant to the "Tenth" paragraph of said agreement.

"In witness thereof, the undersigned, Abraham Jacobi, Chairman of the Joint Committee of Conference and Wisner R. Townsend, Secretary of the Joint Committee of Conference, do hereunto subscribe their names at the City of New York, this.....day of May, 1904."

Thirty out of thirty-five County Associations have ratified. One, Onondaga has refused to ratify, four have not yet reported. The Associations that have ratified represent a membership of 1,711, and those that have not acted a membership of 42. The one refusing to ratify has 14 members. Ratifications have been received from 47 out of the 51 County Societies, four have not yet acted. Those which have ratified represent a membership of 5,569. Those which have not yet acted a membership of 164.

According to the agreement, Article 10, declares "that whenever the Chairman and Secretary of the Joint Conference Committee shall certify that the conditions precedent to an application to the Court have been fully complied with, the Presidents of the respective corporations shall, and they are hereby authorized and required in the name and behalf of their respective corporations to petition the Supreme Court for an order to consolidate in accordance with the terms thereof. Therefore all County Associations and Societies that have not ratified will be asked to appear before the Court at a specified date appointed by the Court, and show cause why the consolidation should not be completed according to the terms of the agreement, despite their failure to ratify.

Hospital Appointments.—The following is the list for the past week: Metropolitan Hospital (Blackwell's Island), J. B. Pentz. Beth Israel, H. Finkelstein, D. Katz, K. Schliwek, M. Dattelbaum.

Navy Doctors Wanted.—Dr. R. E. Marmion, Medical Director of the U. S. Navy, and President of the Navy Medical Examining Board, spoke to the students at the College of Physicians and Surgeons on May 4 upon the advantages of going into the Government service. In previous years it has been difficult to get good men to enter because of the low status of physicians in the rank of officers, and consequently out of 150 places it was common to find 50 of them vacant. Since 1898, however, this aspect of the situation has changed, and a physician now holds positive rank with a chance for promotion. Upon the consent of the Secretary of the Navy one is allowed to come before this Naval Examining Board. He must swear that he is between the ages of twenty-one and thirty years, must be a citizen of the United States and must fill out all the necessary forms in his own handwriting. The examination is held at Washington and occupies nine days, during which the candidate first undergoes a physical test. Failure to pass this debars from further examination. Dr. Marmion stated emphatically that a "pull" is unnecessary and is often quite useless, for each man must stand on the merits he can display before the examiners. For those who pass and are properly commissioned there is a special Naval Medical School at Annapolis where the candidates study for five months previous to actual service. Here they are taught naval law, military surgery, military medicine and tropical diseases, hygiene and quarantine, broad sword and other physical exercises, and are obliged to spend seven and a half hours a week in the bacteriological laboratory. After this course is completed each man is assigned to his post of duty. The salaries range from $1,700 to $4,500 and are likely to be raised 50 per cent. at the next session of Congress. After three years' work in the position to which he was originally assigned a naval doctor may again come before the Board for an examination for promotion.

Professor Bull's Farewell.—On May 4 Prof. William T. Bull delivered his last lecture at the College of Physicians and Surgeons. As a few minutes of the hour were left he followed the custom of those who had seen a long course of service in the college by making a few remarks in laying down the burden and honors of his position. He felt that the time had come in the course of an agreeable voyage to part with pleasant company. The many years during which he had lectured in surgery had been full of pleasure and profit, to himself at least, because the audiences were always so interested and so responsive. Many a time he has said and wishes again to repeat the statement that medical students are the best of any class of professional students, because they so unreservedly give their time, energy and enthusiasm to the work in hand. It is no uncommon thing to find men who were known to be loafers in their respective universities come into a medical school and set up for themselves a new record, a new standard and a spirit of sincerity and devotion formerly entirely foreign to their natures. The spirit of the students had always affected and inspired him to do more and better work in this beloved profession. The present occasion was not a separation but the beginning of a new relationship in which the men before him were to go out into the world and add a bit to their knowledge of disease, and in this respect he hopes henceforth to find leisure and become a fellow-student. He was glad that his successor and those associated with him were graduates from these benches, and felt sure that they would receive the same kind of consideration from the students that he himself had always experienced. When Prof. Bull had finished F. D. H. Coerr, representing the third and fourth year classes, in a very fitting speech presented a silver loving cup. In replying Dr. Bull said that he wished for the voice, hands, feet, and lungs of those before him in order that he might show his gratification. Never before had he received such a "send-off," save possibly once when in college he was disciplined by the Faculty and given a leave of absence. He wished all before him a pleasant vacation and an affectionate farewell.

Bust of Dr. Helmuth.—A bust of the late Dr. William Tod Helmuth was unveiled in the surgical amphitheatre of Flower Hospital, in connection with the commencement exercises of the New York Homeopathic Medical College, which occurred last Thursday.

Low Temperature of Milk Required.—A letter sent out on May 10 by Dr. Darlington, Health Commissioner, to all milk dealers and railroads entering the city, says that all milk, the temperature of which is higher than 50° F. will be seized and destroyed, and the offending persons prosecuted. The letter refers to Section 53 of the Sanitary Code, relating to adulterated milk, and said that hereafter that section would be enforced. When he announced that the letter had been issued, Dr. Darlington said that more than 2,000,000 quarts of milk come into the city daily, and that fully 4,000,000 persons are supplied. He believed, he said, that 25 per cent. of the deaths among babies in the summer was due to milk rendered impure by its high temperature. As long as the temperature of milk is kept below 50 degrees, there is little, if any, danger, he said, but when the temperature rises to 55 or 60 degrees, the germs split up and multiply with great rapidity. All milk above

50 degrees will be destroyed, and violators will be liable to a fine of from $25 to $500. Dr. Darlington has had his milk inspectors equipped with State authority, and they are investigating the dairies throughout the State.

PHILADELPHIA.

Address by Dr. Freeman.—Dr. Rowland G. Freeman, of New York, addressed the Philadelphia Pediatric Society at the meeting of May 10 on "The Feeding and Care of Children After the First Year." At the close of the meeting a reception was tendered Dr. Freeman at the Hotel Stenton.

Nurse Added to Staff of Normal School.—An innovation by the Keystone State Normal School at Kutztown, Pa., is the addition to the staff of a trained nurse who will attend to the wants of students that may be taken ill while at the school. Miss Mabel Brown, formerly head nurse at the Allentown hospital, has been selected for the place.

Trained Nurses in Convention.—The seventh annual convention of the Nurses' Associated Alumnæ of the United States was held in the Drexel Institute, May 12 to 14. The Association and its affiliated societies control a membership of about 5,000 nurses. One of the chief objects is to secure state registration of trained nurses.

Health Report.—The number of cases of typhoid fever for the week ending May 7, though abnormally high, continues the steady decrease that has obtained during the past four weeks; in this time the new cases have fallen from 389 to 277. The total number for the year is now 3,711. A large number of merchants, manufacturers and others to whom the Trades League sent letters asking them to provide filtered, boiled or spring water for the use of their employees have made favorable reply. During the week quoted, the deaths from pneumonia equaled those from pulmonary tuberculosis, there being 86 of each.

Pennsylvania Society for the Prevention of Tuberculosis.—At the annual meeting held May 4, Dr. Howard S. Anders was elected President and Dr. Ward Brinton, Secretary. Dr. Anders decried the use in street cars of the old-fashioned velvet cushions, saying that they contain typhoid, tubercle and other bacilli. He also stated that the society had protested against the methods of street cleaning now in vogue and had suggested that this be done early in the morning when but few people were on the street; the bureau of street cleaning has as yet made no reply. The society has been informed by the authorities that it is difficult to enforce the anti-spitting ordinance as the policemen pay but little attention to it; councils will not make an appropriation for maintaining special officers for this purpose.

Illegal Practitioners.—Several arrests have been made as a result of the stand recently taken by several of the local societies and the State Board of Medical Examiners. One druggist has been held for court; he is a graduate physician but has failed twice to pass the State Board. The head of an electrotherapeutic institute was arrested for obtaining money by false pretense; he was released by the magistrate, who held that the promise of cure by electricity was not illegal. A member of the senior class of Medico-Chirurgical College has been expelled by that institution for practicing medicine illegally and has since been arrested.

Large Hospital Deficits.—Nearly all the hospitals in the city are confronted by unusually large deficits for the past year. The largest is that of the Pennsylvania hospital which was run at a loss of $33,692.90. The deficit is in every instance attributed largely to the increased cost of foodstuffs, fuel and other necessary supplies. The unusually large number of typhoid fever patients was also a drain on many of the institutions. In reality many of the hospitals are beggaring themselves by the indiscriminate treatment of an increasing number of free patients. It is particularly unfortunate that the large deficits should come at the time when so many of the hospitals are needing new buildings and equipment.

Gastro-enterostomy for Supposed Carcinoma.—At the Philadelphia Academy of Surgery, May 2, Dr. John H. Gibbon reported a case of supposed carcinomatous obstruction of the pylorus nine months after posterior gastro-enterostomy and exhibited the patient. Dr. Gibbon said he reported the case for three reasons: (1) To show that it was a difficult matter to differentiate gastric ulcer from gastric carcinoma when the ulcer is infiltrated, even when the abdomen has been opened; (2) to show the advantage of doing gastro-enterostomy even in the presence of apparently hopeless malignant disease; (3) to explain why recovery occurs after supposed cases of gastric cancer. The patient was a woman thirty-eight years of age who had exhibited gastric symptoms for some eight years. Benign obstruction of the pylorus was diagnosed. When the abdomen was opened a pyloric mass the size of a lemon was found and the glands in the lesser omentum were enlarged. The diagnosis was changed to that of malignant disease and gastro-enterostomy was done with the intention of doing later a partial gastrectomy if the condition of the patient so improved as to warrant it. The patient has markedly improved since the operation; she has gained about 30 pounds and is now the picture of health. The after-history of this patient leaves no doubt in the mind of Dr. Gibbon that he was dealing with an indurated gastric ulcer.

Obituary.—Dr. William Barton Hopkins, the well-known surgeon, died on May 4 after an illness of little more than forty-eight hours. He was on his way south to join a friend on a pleasure tour when he was seized with cholera morbus and survived but a short time after reaching home. Dr. Hopkins was surgeon to the Pennsylvania Hospital and to the Orthopedic Hospital and Infirmary of Nervous Diseases; for years he was surgeon to the Episcopal Hospital. His surgical writings, particularly his book on Fractures, have been widely read. Dr. Hopkins was prominent socially and was a member of the Rittenhouse, Country, New York Yacht, Corinthian Yacht, and numerous medical clubs. He was a grandson of Dr. Samuel Hopkins and a grandnephew of Dr. John Rhea Barton.

Dr. Roberts Bartholow, professor emeritus of materia medica and therapeutics and hygiene in Jefferson Medical College, and widely known as an author of medical works, died last Tuesday at his home, 1527 Locust street, Philadelphia. He was seventy-three years old. Dr. Bartholow was born in Maryland and was graduated in medicine from the University of Maryland in 1852. He served as medical director in the army, in Utah, in 1857. During the Civil War he was first medical director on General McClellan's staff, and later chief of various army hospitals. After serving on the faculty of Ohio Medical College he came to Philadelphia, and for many years was an active member of the Jefferson College faculty. He belonged to many learned societies at home and abroad.

CHICAGO.

Examination of Medical Officers Held.—An examination of candidates for medical officers for the Illinois National Guard was held at Rush Medical College, April 30. Eight candidates took the examination; of these, five were for the naval reserves, two were dental surgeons, and one examination was promotional. The range of subjects included anatomy, physiology, chemistry, materia medica and therapeutics, pathology and bacteriology, hygiene and sanitation, military surgery and practice of medicine. The naval candidates were examined on naval hygiene and sanitation, and the dentists on anatomy, physiology and dentistry.

Death Rate in April.—The death rate for last month was, with three exceptions, the lowest on record. The 2,486 deaths reported during the month represent an annual death rate of 15.68 per 1,000. The great reduction, as compared with 1903, is in the deaths of children under five, and amounts to nearly 30 per cent.

Honor Founder of Hospital.—Celebrating the occupancy of the new dispensary of the Chicago Lying-in Hospital, the nurses and internes presented a gold loving cup to Dr. Joseph B. De Lee, founder of the hospital.

Branch Hospitals.—Hospitals in several different sections of the city, built by the County and maintained as branches of the County Hospital, are proposed by President Henry G. Foreman, President of the County Board. The plan was outlined at a recent meeting, and was favorably received by the members. The plan is to submit to the people of the County at the election next fall the question of a bond issue for the creation of three branch hospitals, and the construction of new fireproof buildings in all instances where the County does not possess fireproof buildings more than two stories in height.

Arteriosclerosis in Its Relation to Life Insurance.—Dr. Wm. Cuthbertson read a paper on this subject before a recent meeting of the Chicago Medical Examiners' Association. Among other things, he stated that when once this disease was established, its onward march was sure, and its arrest or cure was not possible by any therapeutic measures known to medical science at the present day. There were remedial measures at the command of the profession, such as nitroglycerin, the iodide of potash, etc., which would mitigate the severity of the symptoms and prolong life for a longer or shorter period; but this fact did not lower the mortality rate, or which was of more importance to the profession, decrease the risk or lower the expense of the companies in whose employ physicians were. Heretofore too little attention had been paid to this disease, both by the internists, and by medical examiners, and the fault lay in the early medical training of physicians, which led them to look upon arteriosclerosis only as a disease of middle or particularly late life, presumably associated with intemperate habits and all that went with them, such as syphilis, undue exposure, etc. Medical literature of recent years showed an awakened interest in this form of disease, and augured well for the intelligent, studious examiner, to be amply forewarned and forearmed in regard to a malady which to the author's mind had been an important factor in limiting the life expectancy of many a risk which had been passed by the examiner in the past as first class. The author then proceeded to consider the methods by which the physician could determine its presence either in its incipiency or after it had progressed to a well-marked stage. He considered the etiology, symptoms and diagnosis. He said that Dr. Carl Beck relied on the X-rays in detecting a sclerotic condition of the arteries and determining whether it was local or diffuse. Neusser called attention to marked gastro-intestinal symptoms and to the abdominal variety of angina pectoris with burning pain deep in the epigastrium radiating over the thorax. In a recent article, Stengel called attention to the occurrence of an increased blood pressure as one of the earliest signs of this disease. He pictured cases of pseudoanemia with high arterial tension, and urine of alternately high and low specific gravity, and containing a number of cylindroids, as well as an increase in the total amount of urine. Suker and other oculists had emphasized the examination of the eyes in these cases, by which an early diagnosis could be made from the retinal changes, there being a thickening of the retinal arteries, and a compression of the veins where they were crossed by the arteries. Suker says: "The eye is the only place where one can get a direct view of the blood vessels; and hence an ophthalmologic examination should early be resorted to in all suspected cases." Stengel, in the article above referred to, says "When the heart is especially affected, symptoms may be in evidence early. Arrhythmia, increased force of the apex impulse, and suggestions of dyspnea are the most important of these." With the examiner bearing these points of diagnosis in mind, a suspicion of arteriosclerosis should be awakened early, and if the symptoms are not sufficiently pronounced to warrant a rejection, the interests of the company may be conserved, and no injustice done the applicant, by postponing him for further observation.

The Nerve Hygiene of School Children.—In a paper on this subject, Dr. Walter M. Fitch said that one of the most serious health problems now before the profession is the one of the enormous increase of insanity and neurasthenia. In view of this fact, the study of the development of the nervous mechanism and of the various phases of strain and stress put on it during growth becomes of paramount importance. The education of the modern child is of necessity a forcing process. The child must be prepared in early life for some form of industrial career. If not well prepared, for early industrial achievement, his success in life is more than doubtful. There is great importance in the method of teaching, but the strain of continuous nervous effort through the period of development profoundly influences the health of the nervous system throughout life. The medical guardians of the growing child are often careless in their watch on his health. Not only is his work in school allowed to be pushed to the verge of exhaustion, but unwise parents are permitted to add to this work an extra strain in the form of music study. The effect of this is the development of a predisposition to nervous breakdown. A second fault in medical practice recorded against the profession is that physicians often fail to remove bodily causes of peripheral nerve irritation. These irritations are usually slight, but become wearing and exhausting to the nervous system because of their persistency. The chief sources of peripheral irritation are phimosis, eye-strain, and the ovarian irritation of puberty in girls. The third fault in medical practice is the common neglect of the condition of subnormal respiration. This may be due either to obstruction in the respiratory passages, as from adenoids, or to weakness of the muscles of respiration, or to both causes; but suboxidation of the blood produces a condition of nerve poisoning which

greatly interferes with the normal development of the neurons. Broadly speaking, a broken or exhausted nervous system can never be restored to the normal, whether the derangement be structural or nutritional. One must look for the solution of this problem to hygienic measures adapted to the needs of the organism during its growth. One may prevent where he cannot cure.

GENERAL.

Antidote for Snake Bite.—It was announced at the annual banquet of the Association of American Physicians in Washington, on May 10, that as the result of researches by Dr. Noguchi, of Japan, working under a grant from the Carnegie Institution, a positive antidote for rattlesnake venom had been discovered. The announcement was made by Dr. S. Weir Mitchell, of Philadelphia, who read a letter from Dr. Noguchi, who is now at the Serum Institution in Copenhagen, where he has been making his researches for the past several months. From the nature of the announcement it is believed by the physicians who were present that the serum which Dr. Noguchi says he has discovered will prove to be of great value in human therapeutics. The fact that the announcement of the discovery was made by Dr. Mitchell is of particular interest, as more than forty years ago the latter worked long and unsuccessfully on the problem that has been solved by Dr. Noguchi. In his experiments he found that guinea-pigs that had received injections of rattlesnake poison up to twelve times the amount necessary to produce death and had then received injections of the anticrotalic serum experienced no evil effects from the poison. Dr. Noguchi also believes that this discovery will lead shortly to the discovery of serums for other poisons, and that it will not be long before the serums will be placed on the market, particularly in regions where the rattlesnake is always a factor to be reckoned with.

Money Where it Will Do the Most Good.—The Johns Hopkins Hospital has received its promised gift of $500,000 from John D. Rockefeller. The gift consists of $290,000 in cash and $210,000 in three classes of gilt-edged securities. Mr. Rockefeller surprised the trustees by sending an additional $1,600. This, in accordance with Mr. Rockefeller's business ideas, represents the interest on the gift from April 4, the day he announced it. With a list of the securities was sent a voucher for them to be signed and a brief note from Mr. Rockefeller, through his agent, saying he had made good his promise and expressing the hope that "it will do good to your most excellent institution." The securities will be retained and the money will be used to rebuild on the lots owned by the hospital in the burned district. Some of the lots will be sold and on others the hospital will now rebuild as rapidly as possible. The money received from Rockefeller represents about the hospital's loss by the recent fire.

Funds for the Hartford Hospital.—Probably one of the largest benefit performances ever given in the country was that for the Hartford Hospital on May 9 in Hartford, Conn., when more than $25,000 was realized and will be turned into the funds of the hospital. The performance was given by professionals headed by Marshall P. Wilder, who went to school in that city. The performance was attended by an immense crowd at Poli's Theatre, and was made one of the social events of the season.

Suits for Typhoid Damage.—An association has been formed in Butler, Pa., to bring actions for damages against the water company, the damage having been caused by the typhoid epidemic which lately ravaged that town, and the allegation of the complainants being that it was the result of negligence on the part of the water company in failing to protect the sources of its water supply and to maintain the purity and potability of the water it distributed. This is extremely interesting, and as the procedure is a new one the results of which can scarcely be forecast, it will be followed with attention.

Yellow Fever and the Mexican Frontier.—One case of yellow fever was discovered by the health authorities at Vera Cruz on May 9. The patient was sent to San Sebastian Hospital, and measures taken to prevent a spread of the disease. This is the first case for several weeks. The authorities are doing excellent work in house to house disinfection. On April 10 Dr. George R. Tabor, Texas State Health officer, received a telegram from Dr. Eduardo Liceaga, President of the Superior Board of Health of Mexico, saying that he would permit this State to send quarantine agents to that country. This is the concession Texas has been fighting for.

Stanley's Observations on Malaria.—The recent death of the African explorer, Sir Henry M. Stanley, brings to mind some curious observations made by him during his trip across that continent for the relief of Emin Pasha, and published in his work entitled "In Darkest Africa," 1890. Stanley found that the members of his party were attacked by malaria at all altitudes from 0 to 5,000 feet, and rather more frequently in the open country than in the jungles. It was his impression that symptoms of the fever were more prevalent while descending streams in boats than when ascending the same and that the direction of the wind had some influence. The most noteworthy remark was that of Emin Pasha himself, who, in early life, had received a medical training, quoting Stanley's own words: "Emin Pasha informed me that he always took a mosquito curtain with him, as he believed that it was an excellent protector against miasmatic exhalations of the night."

Hospital Appointments.—The following men have won appointments at St. Joseph's Hospital, Baltimore, for one year: Dr. H. C. Coburn, Jr., Columbian University, '03; Dr. Walton H. Hopkins, University of Maryland, '04; Dr. J. M. Lynch, University of Maryland, '04; Dr. C. T. Ralls, Physicians and Surgeons, Baltimore '04; Dr. Jos. J. Boucher, Physician and Surgeons, Baltimore '04.

OBITUARY.

Dr. Clinton Cushing, a well-known surgeon and gynecologist, died in Washington May 10. He had a wide reputation on the Pacific Coast, was a member of the faculty of the University of California, and maintained a private sanitarium in that State. Of late years he had retired from active practice and spent the winters in Washington.

Dr. Orissa W. Gould, well known for her philanthropy and missionary work, especially among the poor of the East Side, died on May 3 of cerebrospinal fever at the New York Hospital. On Sunday evening she was stricken at the Women's Missionary Society, 162 Second avenue, this city. She was removed to the hospital, where she died. Dr. Gould was forty-three years old. She began the study of medicine at an early age, and was graduated from the Women's Medical College of New York.

Dr. William H. McGee, a leading physician of Warren County, N. J., died at his home in Belvidere last Wednesday, aged fifty-six years. He was a member of the Warren County Medical Society and resident physician of the Pennsylvania Railroad Company.

SOCIETY PROCEEDINGS.

ASSOCIATION OF AMERICAN PHYSICIANS.

Nineteenth Annual Meeting, held at Washington, D. C., May 10 and 11, 1904.

FIRST DAY—MAY 10TH.

Presidential Address.—The session was opened by the President's address delivered by Dr. Wm. T. Councilman, of Boston.

Increase of Membership.—Dr. Councilman said that an increase of membership seemed desirable, yet there were certain difficulties. Too great a number would take away the helpfulness of the Association, because pathologists and laboratory workers would not be brought in that intimate contact with clinicians which now constitutes the most beneficial and characteristic feature of the Association. Even with the present limitation of membership it seemed possible to admit certain of the young active workers whose presence would be eminently desirable.

Honorary Membership and Retirement.—Dr. Councilman suggested that after twenty years of active membership most men had ceased to be actively productive of new observations, so he suggested that each year those who have been twenty years members be placed on the roll of honorary members, with all their old privileges of discussion and presentation of cases, but their places on the active list to be taken by younger men. This would, after two years, the Association having been founded in 1886, give places for an average of seven new members each for many years. In this way the activity of the Association can be maintained and its usefulness to medicine in America not allowed to wane. As it is, the amount of good that has been accomplished by the Association since 1886 can scarcely be overestimated. It has been a great factor in the wonderful progress that has come in American medicine in these latter years.

Increased Dues.—The treasurer then announced that owing to the occurrence of a deficit the annual fee for next year would be $15 instead of the usual $10.

Reed Memorial Committee.—Dr. Janeway, of New York, and Dr. Wm. H. Welch, of Baltimore, seconded the nomination of a committee to cooperate with the trustees of the fund for the erection of a suitable memorial to Dr. Walter Reed, the yellow fever expert. Dr. Welch said that the movement is now well under way and though the character of the memorial has not been decided upon, much was being done to secure interest in it generally in the medical profession of the country.

Influence of Extract of Suprarenal Glands.—The first scientific business was the reading of a paper by Dr. S. J. Meltzer, of New York City, on the influence of extract of suprarenal glands on elimination and absorption, which he illustrated by specimens of tissues and exudates. In frogs if enough strychnine be injected so that ordinarily the animal would suffer from tetanus the simultaneous injection of adrenalin will either materially delay the occurrence of the tetanic phenomena or will prevent it entirely. This does not seem to be due to the neutralizing chemical action of adrenalin upon the strychnine but upon some biological action. If adrenalin be given to frogs a condition resembling paralysis supervenes. The animal does not move and even when placed on its back, does not right itself. This paralyzing action seems to neutralize the effect of the strychnine. In rabbits the injection of enough strychnine normally to cause fatal tetanization, if followed by adrenalin injections, will have no effect, or the effect will be delayed for hours. These observations seem to point to delay of absorption.

Fluorescence Experiments.—Fluorescein causes coloring of animal tissues—the cornea, the mucous membranes, etc., without hurting the animal. If adrenalin be injected just before the injection of fluorescein the coloring of the tissues is much slower and even less complete. With regard to elimination of the fluorescein through the kidneys there is distinct evidence of delay. On the other hand, the substance is deposited much more slowly in such internal tissues as the liver and the kidneys and more of it is found to be retained in the blood serum.

Practical Applications.—Dr. Meltzer suggested that adrenalin might be employed with advantage to delay the elimination of certain drugs, the retention of which in the organism is too brief to accomplish the purpose expected of them. On the other hand, the danger of delay of elimination of toxic substances, as during nephritis, might be dangerous and when toxemic conditions are present adrenalin will have to be used with more care than is now the rule.

Therapeutic Administration.—Dr. W. Gilman Thompson, of New York, said that in cases of typhoid fever particularly, where he administered adrenalin for hemorrhage, he had never seen any effect produced by the substance either on the amount or the character of the urinary secretion. It seems unlikely then that in ordinary therapeutic doses it can have the danger that Dr. Meltzer suggests.

Brief Action of Adrenalin.—Dr. Hobart A. Hare, of Philadelphia, said that seeing the very brief action of adrenalin it seems utterly unlikely that any serious delay of elimination can be brought about or that the action of drugs over a longer time than normal can be secured by means of it, unless it be administered more frequently than is now the case. Dr. Hare has, however, seen adrenalin produce apparently greater susceptibility to infection. In tonsillitis, for instance, when used in a spray to decrease congestion and lessen pain the surface covered by exudate is apt to be increased in some cases and certain of the cervical glands, even of the deep chain, may become affected. Whether it may not have a like effect upon the nose must be borne in mind. When used hypodermically, though with all the precautions that usually save the patient this inconvenience, the occurrence of sloughs is by no means unusual and seems to be due to the loss of tissue resistance under the action of adrenalin.

Duration of Action.—Dr. Meltzer, in closing the discussion, said that the length of the action of suprarenal is as yet unknown. On striate muscle fiber it seems to act for a very brief period; on unstriated fiber for a longer period. On the endothelium of capillaries, which is of contractile nature, its action seems to be prolonged. The action time of the substance is now actually being studied and was really one of the problems looked into in the present investigation. The practical applications suggested are only meant to call the attention of medical men to certain lines of thought.

Polyuria in Typhoid Fever.—Dr. M. Howard Fussell, of Philadelphia, reported a case of typhoid fever in which polyuria, to a very marked degree, set in about the tenth day. On the twelfth day the patient passed 7 quarts of urine; on the fourteenth day 15 pints and more than 3 quarts every day afterward, until the temperature became normal. There were no abnormalities of the urine and the normal quantity of urea was passed. The patient had no history of ever having had polyuria before and has had none since. There were very severe functional nervous symptoms amounting practically to attacks of hysteria during the polyuria. The patient was very restless, being compelled to pass 6 ounces of urine every hour or so and the skin became dry. Polydipsia followed the increase of urination but did not precede it. The patient had taken salol, but this, later,

when in health, showed no tendency to increase his urine. Analysis of other cases shows Dr. Fussell that polyuria in the convalescence from typhoid fever is not as common as would be believed from the statements in text-books.

Retention of Water in Fevers.—Dr. George Dock, of Ann Arbor, Michigan, said that the old theory that water is retained in fevers, that is, that febrile patients have a notable disproportion between the amount of urine passed and the liquid consumed, would seem to need investigation. Certain it is that the use of the bath has materially increased the amount of urine, as a rule, and that this has something to do with its good effect. Cantani tried to treat patients by large amounts of fluids and found that when 14 quarts of liquid were given about 12 quarts passed off in the urine. The specific gravity in cases of polyuria thus induced is not very far from normal, in Dr. Dock's experience, and there is not the thin, light-colored urine that might be expected.

Polyuria and Abdominal Pain.—Dr. Osler, of Baltimore, said that many painful conditions of the abdomen are associated with polyuria and this may be held to account, in some measure at least, for the polyuria of typhoid in its latter stage. Individual patients are very variable in this respect, however. Aneurism of the abdominal aorta is very frequently associated with polyuria. Other tumors may have a like effect, especially in neurotic individuals in whom, for some not well understood reason, the tendency to variability of the urinary flow is quite marked.

Copious Water in Typhoid Fever.—Dr. Wm. S. Thayer, of Baltimore, said that in Cleveland Dr. Cushing has been treating typhoid fever cases with all the water they want. Of late years there has been a well-marked determination to give typhoid patients frequent drinks, yet they never seem to be satisfied. Dr. Cushing has a small reservoir of fresh water placed beside the patient's bed and from it a tube, through which, without disturbing himself or others, the patient may suck water whenever he wishes. In this way enormous quantities of water are consumed, sometimes several gallons a day. There is a corresponding increase in the amount of urine passed. One patient passed nearly 500 ounces in twenty-four hours. The result of this treatment has been very favorable. Patients are less restless and the mortality is lower. The idea of washing out intestines and the blood of toxic material seems to be thus accomplished to the satisfaction of patient and physician.

Dr. Fussell, in closing the discussion, said that the polyuria seemed to precede and be the immediate cause of whatever polydipsia was present in the case.

Venous Thrombosis in Typhoid Fever.—Dr. Wm. S. Thayer, of Johns Hopkins Hospital, analyzed the 39 cases of thrombosis in typhoid fever which have occurred at that hospital. Five were fatal, two of them through embolism of the lung. Twenty-six of the cases occurred on the left side, 5 on the right, 9 on both sides. In 21 cases the femoral vein was affected, in 5 the popliteal, in 5 the iliac and in 5 the veins of the calf. One occurred during the first week, two during the second, some scattering cases up to the thirteenth week but most cases in the fourth, fifth and sixth weeks and after the fever had subsided.

Symptoms and Course.—In all but one of the cases of femoral vein thrombosis there was pain along that vein and in 9 cases there was also pain in Scarpa's triangle. The symptoms always began with striking suddenness though usually before the localized pain there was a general malaise with chill. Some of the chills were very severe. In the case of iliac thrombosis there was sharp abdominal pain with signs of shock, causing the suspicion of perforation. Exploratory laparotomy was done and the true condition ascertained. The patient recovered without complication. Leucocytosis was present in all the cases, in most being over 10,000 white blood cells to the cubic millimeter. Some inflammatory changes in the walls of the veins were found in cases where autopsies were made but it was not decided whether these were not secondary rather than primary. The accepted idea of etiology is the occurrence of phlebitis as a predisposing factor to the thrombosis.

Permanent Disability.—All of the patients under observation at Johns Hopkins have more or less permanent disability as the result of the thrombosis. The leg is distinctly weaker, it is permanently enlarged and feels cumbrously heavy and on much exertion it swells and compels the patient to rest. The acme of discomfort is noticed in the summer time, though some patients complain of cold feet in the winter and of the tendency for the affected limb to go to sleep. Whatever of relief has come in most cases has been the result of the formation of a collateral venous circulation by means of varicose dilatation of veins. In most of the cases the varicose veins are to be seen not only on the leg but also in a triangle on the abdomen the apex of which is the umbilicus and the blood is evidently thus passed to the other side. In cases of iliac thromboses the varicose veins run up above the umbilicus, making anastomoses with the internal mammary veins, also with the axillary. These veins are large tortuous structures and give the usual discomfort of varicose veins for other reasons.

Calcium Salts and Thrombosis.—Dr. Geo. L. Peabody, of New York, said, in opening the discussion, that experiments seem to show that the presence of abnormally large amounts of calcium salts in the blood predispose to the formation of thrombi. The increase of calcium salts is easy to understand in the blood of typhoid fever patients fed exclusively on milk, for milk contains a large proportion of calcium salts. To neutralize the tendency for these to cause blood coagulation the ingestion of citric acid or soluble citrates in considerable quantities has been suggested as a routine practice. As most patients with typhoid fever rather like lemonade, it is not a difficult matter to carry this out.

Preliminary Fever.—Dr. Alfred Stengel, of Philadelphia, said that a set of general symptoms has in his experience nearly always preceded the occurrence of thrombosis. This would seem to show the presence of an infectious focus from which some absorption was taking place and apparently points to the existence of a previous phlebitis. Some of the chills were very severe and there was high fever with a sweat—the whole process partaking of the septic type.

Dr. Wm. H. Welch said that the tendency now is to revert to the old explanation of a preceding localized phlebitis as the cause of the thrombus formation. For a long period Virchow's studies were supposed to have disproved this but the French school have upheld it and have shown of late years that there are excellent reasons for it. One feature that favors it is the occurrence of general symptoms before the local thrombosis shows itself. Especially is there apt to be a marked disturbance of the pulse with the development of a period of extraordinary rapidity, out of all proportion to the temperature at the time, though that may be notably elevated.

No Complete Recovery.—Dr. W. Gilman Thompson, of New York, said that he has never seen anything like complete recovery of the usefulness of the limb after thrombosis. Large varicosities do help the circulation but prove a source of discomfort in themselves. In a recent case in whom, after iliac thrombosis, large abdominal veins had formed, the patient developed appendicitis and the incision had to be carefully planned so as to avoid these vessels, some of them larger than the little finger.

Dr. James Tyson, of Philadelphia, said that in all cases of vascular obstruction pain is a prominent symptom. In angina pectoris in the obstruction of the artery of a leg preceding gangrene even in the ordinary cramps it seems not unlikely that the underlying cause of pain is the constriction of arteries. The subject deserves to be investigated from that aspect.

Disability not Permanent in Many Cases.—Dr. Wm. Osler, of Baltimore, said that in many cases the disability is not so permanent, nor so serious as is said. He has seen cases which recovered completely. In fact, he considers that all who have healthy vascular systems will recover completely. To his students he says, always blame the parents for not having given the patient a good venous system when the prognosis of ultimate recovery does not seem likely to be fulfilled. Venous thrombosis after typhoid is very different to the form known as phlegmasia alba dolens after puerperal fever. Very rarely if ever does the limb become swollen as in this, or so white or tender to the touch. The phlebitis is of mild character and is not extensive.

Clinical Studies in Arteriosclerosis.—Dr. Alfred Stengel, of Philadelphia, said that in spite of the general impression to that effect blood pressure in arteriosclerosis is not necessarily always high. His measurements were made with the Riva-Rocci instrument for determining blood pressure as modified by Stanton. This measures not only systolic but also diastolic blood pressure. Diastolic blood pressure is always high in these cases until the myocardium gives out, when of course, there is a fall. Dr. Stengel's results were confirmed by a manometer applied to a peripheral artery. Sustained diastolic pressure is a very early manifestation of arteriosclerosis. Dr. Stengel also noted the excellent condition of the blood in some patients in whom the rapid development of arteriosclerosis with its characteristic pallor had brought the thought of malignant disease. In these cases the hemoglobin was 80 to 90 and the red blood cells not below 4,000,000. This seems to show that very small arteries, perhaps even the capillaries themselves, are early involved in the arteriosclerotic process. This is of course an interesting problem for which solutions have so far been vainly sought.

Urine in Arteriosclerosis.—The urine in arteriosclerosis in Dr. Stengel's experience shows a very decided tendency to vary greatly from time to time. The specific gravity of the morning urine may be 1.015, that of the evening 1.030 to 1.035. This variability is common, also to the amount of urine passed, even in cases where the absence of any formed elements that are distinctly pathological, shows that the kidneys themselves are very much affected in their secreting substance.

Earliest Sign of Arteriosclerosis.—This, in Dr. Stengel's observations, is always a prolongation or sustaining of the first heart sound. Long before there is an accentuated second sound this sustaining of the first sound will be quite audible.

Dr. Solomon Solis-Cohen, of Philadelphia, said, in the discussion, that a prolongation of the first sound of the heart without any distinct murmur is very common in the early stages of arteriosclerosis. With regard to diastolic tension Broadbent long ago called attention to the fact that very early in arteriosclerotic conditions there was a sustenance of the tension of the pulse between beats. This is evidently the same sign as is now described as high diastolic tension. In the urine of arteriosclerosis Dr. Cohen has noted a diminution of the toxic elements evidently due to the fact that the arterial change prevented so much blood from going to the kidneys and also interfered with the secreting mechanism.

Strychnine in Fever.—Dr. Richard Cabot, of Boston, gave the details of a number of observations in febrile conditions, mostly typhoid fever, some pneumonias and other fever conditions in which strychnine was administered. The blood pressure of these patients was measured with Stanton's modification of the Riva Rocci sphygmomanometer. In none was there any rise of blood pressure following the administration of strychnine, though all the patients received 1/8 grain per twenty-four hours and some of them as high as 1/6 grain. When the strychnine was abruptly stopped no effect either on blood pressure or on their general condition was noted. At times it was noted that the visit of a friend or the coming of the meal tray had a decided effect on blood pressure such as could not be obtained with even large doses of strychnine.

Strychnine not a Cardiac Stimulant.—Dr. Hobart Amory Hare, of Philadelphia, said that though used as such by most of the members of the medical profession strychnine is not a direct heart tonic. It acts by irritating the nervous system and is something like applying a whip to a high-strung horse already putting forth every effort but overloaded. Whatever beneficial action there is from strychnine is due to the equalization of the circulation. If Dr. Cabot's experiments then will have the effect of making many people revise their conviction as to the action of strychnine much will have been done, even though his observations have all been negative.

Beginning of Nephritis.—Dr. Wm. H. Thomson, of New York, said that there is evidently some substance which causes the high blood pressure so often to be observed before the beginning of true nephritis. Apparently it is the action of this substance on the kidney tissues that eventually leads to their degeneration. The action of this toxic substance resembles very much that of suprarenal extract. Only very minute amounts of the substance are required to produce high blood pressure through narrowing of the arteries, probably not more than 1/500 of a grain being required. Dr. Thomson suggests that the beginning of nephritis may be due to some disturbance of suprarenal function. The tendency of suprarenal extract to produce contraction of kidney tissue has often been shown and would serve to demonstrate how contracted kidney comes about. Dr. Thomson's conclusions with some suggestions as to the practical value of the idea in therapeutics he summarized as follows: (1) High tension pulse occurs too early in nephritis to be due to any other cause than the presence in the blood of a general vasoconstricting agent, similar in its properties to adrenalin. (2) Such an agent would also produce constriction of the renal vessels and general shrinkage of the kidneys, causing interference with the excretion of urea. (3) Prolonged presence of such an agent in the blood would lead ultimately to endarteritis with degeneration of the vascular walls and to cardiac changes. (4) Acute cardiac dilatation may occur from the effects of such a general vasoconstricting agent in the circulation before extensive alterations in the blood vessels have taken place. (5) Aconite is the best vasodilator in nephritis, much more effective than the nitrites. Marked increase in the excretion of urea follow its administration in cases of high tension and Dr. Thomson has used it with excellent results.

Illuminating Gas Poisoning.—Dr. W. Gilman Thompson, of New York, analyzed some 90 cases of poisoning due to illuminating gas inhaled accidentally or with suicidal intent. There were 288 fatal cases in New York in 1902, due mainly to the gas stove and its rubber connections and also to the fact that many persons with no knowledge of gas find their way to New York City. The most prominent feature is the change of the hemoglobin into methemoglobin which prevents the red blood corpuscles from any longer fulfilling their rôle as oxygen carriers. Another almost constant blood change is a large leucocytosis. All the fatal cases had

more than 18,000 white cells, the increase affecting especially the polymorphonuclear cells. Some of the cases showed as high as 50,000. One recovery occurred where the leucocytosis had risen to 44,000.

Clinical Symptoms.—All severe cases show coma, but neither the depth nor length of the coma furnishes any positive indication of the prognosis of the case. After a time all of the cases develop fever usually about 103° F. Some very interesting fatal cases show hyperpyrexia, one as high as 110° F. There is always a marked fall in the respiration rate which may go as low as 3 or 4 to the minute. This appears, however, to be of central origin and pneumonias following the inhalation of gas is rather infrequent. Once the patients begin to recover, convalescence is rather rapid, but at times complete recovery is long delayed, and not always can an adequate reason be found for the prolonged prostration.

Nervous Symptoms Most Important.—The nervous symptoms and their underlying lesions are the most prominent features of illuminating gas poisoning. They are apparently due to the carbon monoxide in the gas. The lesions in the fatal cases are found to be softening and edema of the brain, small hemorrhages from the rupture of minute arteries. These latter phenomena are indeed the specific lesions of gas poisoning. In about 7 per cent. of all cases convulsions develop. Some paralysis hemiplegia or hemiparesis is not uncommon. It is often marked by the patient's comatose condition. There is often a softening of the lenticular nucleus.

Dr. S. Weir Mitchell, of Philadelphia, said that illuminating gas was so different in different cities, or even in different parts of the same city, that the clinical pictures presented in cases would necessarily have many features not in common with one another. Until more was known of the definite composition of such gas, it seems idle almost to discuss the symptom complexes and lesions which it produces.

Defibrinated Blood.—Dr. Stengel said with reference to treatment by intravenous injections that in experiments made upon animals in Philadelphia it seemed to be demonstrated that the use of normal saline injections did not avail to save life, though injections of defibrinated blood from the same animal did.

Dr. Kinnicutt, of New York, said it was very difficult to obtain defibrinated human blood always just when wanted and, besides, when it was obtained surgeons were not always able to inject it successfully.

Dr. W. Gilman Thompson, in closing the discussion, said that it was not always the presence of methemoglobin that killed the patient, for at times the blood was not saturated. This had been demonstrated by finding spectroscopic evidences of hemoglobin in certain cases. Besides, at times, there was recovery as regards the blood condition, yet the patients went on to a fatal termination because of their nervous conditions. Warm saline solution often does good in cases of poisoning by illuminating gas, and as it is so handy it should always be given a thorough trial.

Serum for Rattlesnake Bites.—Dr. S. Weir Mitchell, of Philadelphia, read a letter from Noguchi, the Japanese pathologist, who has been working at the University of Copenhagen, under a grant from the Carnegie Institution. After having studied the question of a serum for rattlesnake bites with Prof. Flexner, at the University of Pennsylvania with some encouraging results, he now announces that he has succeeded in preparing goat serum so that it will prove efficiently curative for rattlesnake bites. The serum is prepared by rendering the goat immune to the action of *Crotalus* poison by gradually increased doses.

Etiology of Exophthalmos.—Dr. MacCallum, of Johns Hopkins, discussed the various causes that have been assigned for the prominence of the eyeballs in exophthalmic goiter and showed that they were all insufficient. He then detailed observations which seemed to prove that exophthalmos is due to the contraction of a cone-shaped structure surrounding the eyeball and containing some unstriped muscle fibers. The contraction of this throws the eyeball forward. Dr. MacCallum's work was made possible by the construction of an instrument by means of which the slightest projection of the eye bulb can be measured and even the rhythmic projection of it, due to pulse and respiration, can be clearly demonstrated.

Diabetes Insipidus.—Dr. Thomas B. Futcher, of Baltimore, described and analyzed the series of cases of diabetes insipidus which have occurred at Johns Hopkins Hospital since its inception. Altogether they are only seven in number, six in the hospital and one in the dispensary. There have been over 7,000 patients in the hospital, so that diabetes insipidus is actually and comparatively a very rare disease. Out of these seven cases four had had syphilis and all of these improved in the administration of potassium iodide. The other causes seem to be heredity, which has been confirmed by the observation of a family for four generations among the ninety members of which more than one in five suffered from the disease. The tendency for the affection to be a sort of equivalent for tuberculosis in preceding generations seemed to be established. The affection occurs much more frequently in males than in females and is most frequent in the decade from thirty to forty years. Perhaps one reason for this is that it is just at this period that syphilitics are most likely to suffer from nervous symptoms due to cerebral lues. The cures effected by the use of potassium iodide are often very marvelous, and even in one case where syphilitic history was denied there was clearing up of most symptoms in a few weeks with a gain of nearly twenty pounds in weight.

Tuberculosis and Diabetes Insipidus.—Dr. Wm. H. Thomson, of New York, said that in one case under his observation a fatal termination showed at autopsy the existence of a miliary tuberculosis. As some of the tubercles were on the floor of the fourth ventricle, where Claude Bernard had found a center for diabetes insipidus just in front of that for diabetes mellitus, this seemed to be the pathological basis for the disease.

Potassium Iodide.—Dr. James Tyson, of Philadelphia, said that this drug often seems to do good even where syphilis is not present. A young fellow whom Dr. Tyson first saw at the age of twelve years is now, after ten years, completely rid of his diabetes insipidus, the main treatment employed being potassium iodide.

Dr. Dock, of Ann Arbor, Mich., said that the more suspicious the previous history as to syphilis the better the prognosis in these cases. In other cases apparently developing on a neurotic basis the outlook is not favorable.

Diabetes Insipidus Not Rare.—Dr. Abraham Jacobi, of New York, said that among children at least diabetes insipidus is by no means a rare disease. It occurs in connection with chorea and other convulsive incidents in child life. Occasionally it is seen after severe whooping cough in delicate children, when it is usually concluded to be due to minute cerebral hemorrhages resulting from the convulsive coughing. In boys from seven to twelve years it is not infrequent as the result of falls upon the occiput. Tumors of the brain cause it. Heredity plays a rôle in its etiology, not only directly but also by the transmission of nervous constitutions. It is often associated with hereditary syphilis. Potassium iodide is the most generally useful remedy in the disease, but in some cases where it fails ergot controls the condition, or at least diminishes the

amount of urine passed. It seems to be especially of use in the non-syphilitic cases.

Unsuspected Irritation of Internal Abdominal Ring.—Dr. Charles G. Stockton, of Buffalo, reported some twelve cases in which irritation at the internal abdominal ring in persons with a hernia and wearing an ill-fitting truss gave rise to peculiar discomfort, sometimes amounting to absolute pain, which led to the diagnosis of other serious abdominal conditions. Now, when so much attention is paid to intra-abdominal pain of any kind, this group of reflex cases is especially important. Since Dr. Stockton has come to recognize it the number of cases seen has increased and it seems clear that many more persons are suffering from it than might be expected. The treatment of the condition, which also at once serves to confirm the diagnosis is to apply a well-fitting truss.

Prolonged Hysteria.—Dr. S. Weir Mitchell reported a case of a severe type of hysteria which has been under his observation since 1876. The patient went through a number of varied movements as the result of his hysteria. One was the pendulum swing of his arm to and from the body some 150 times to the minute. Later a rotary movement of the same arm developed, the hand being carried round the shoulder over 100 times to the minute. Notwithstanding the apparently exhausting character of these movements persistently carried on during his waking hours, the patient did not seem to suffer from fatigue and remained in excellent health. If the movement was stopped the patient suffered intensely and there was a tendency at least often completed to the development of a generalized convulsive movement. All ordinary drug treatment failed and the patient visited many clinics and physicians. Finally hypnotism was tried but the patient had a decided objection to it. Some 30 seances were held but he was never brought so completely under its influence as to lose sense perception. After a time, however, his convulsive movements became less and then disappeared completely, so that for some three months he was able to take a position as assistant librarian at Jefferson Medical College, Philadelphia. At the end of that time, however, there was some difficulty causing emotional strain and the old-time convulsive movements reappeared. This time he absolutely refused to be treated by hypnotism, saying that since the Lord had visited him with the affliction he must needs bear it. After a time Dr. Weir Mitchell himself succeeded in persuading him to submit to hypnotism again and he was somewhat improved, but he seemed to be less comfortable generally when the movements were not going on. Perhaps he lacked the attention which, because of his very peculiarly interesting condition, was showered upon him. His death took place suddenly and without any apparent cause.

Autopsy Findings.—The autopsy was made very carefully and with minute completeness by Dr. Spiller, who found absolutely nothing that could be considered pathological. It seems difficult to Dr. Mitchell to understand how these rapid movements could continue for so long without being registered on the cerebral cells. Of course the arm area of the side opposite the convulsed arm was minutely examined. The case is ideal as a document in hysteria. No other pathological condition had supervened to spoil any characteristic changes of hysteria that might be present and yet absolutely nothing even suspicious was found. This is not so surprising, however, when it is realized that there are so far as known no specific pathologic lesions for chorea or the convulsive tics or paramyeclonus multiplex and related syndromes described of late years.

Observations on Subliminal Consciousness.—Dr. Morton Prince, of Boston, gave some details of recent observations on a young man suffering from hysterical manifestations including anesthesia and paresis. While he could not feel he yet could be made to see reflected in the surface of a glass of water in which he was told to look, a hand on which he could count the number of times he was touched. His first attack occurred after a fright one night when he was passing a cemetery on a lonely road. Whenever in hypnosis he could be made to go back in his history beyond that night he did not suffer from the anesthesia and other accidents which had developed at that time, so that there seems to be a record in the brain of successive states of consciousness and the later conditions may rule the external sensibility.

Dr. Horatio C. Wood, of Philadelphia, said that the absence of a record on the cerebral cells of movements accomplished is not surprising. It is the voluntary control of cells that would seem to register itself while the cells are protected from interference with their normal functions by their lower connections in the nervous system. Chorea and convulsive movements generally seem to be the assumption by voluntary muscle of the character of such involuntary muscles as the heart and the unstriped muscles generally which execute rhythmic movements.

Unusual Forms of Acute Myelitis.—Dr. B. Sachs, of New York, reported some anomalous cases of acute myelitis which seem to throw light on the recent discussions with regard to forms of infectious myelitis and cases where no infection can be traced, yet without syphilis or trauma in the history. In one of his cases the symptoms that developed were evidently of the nature of a spinal apoplexy due to the rupture of a blood vessel in the cord in a person suffering from degeneration of arteries. The existence of such changes cannot be doubted and the arteries of the cord may rupture as well as the brain. Such cases are undoubtedly rare, yet their possibility must ever be taken into account.

Streptococcic Myelitis.—In the case of a young girl the symptoms of myelitis developed just before the occurrence of a series of multiple abscesses in various parts of the body. The first of these abscesses in the inguinal region, was thought to be tuberculous and connected with the spine, which did not prove to be the case, however. In all the other abscesses streptococci were found practically in pure culture. It was concluded then that the focus in the cord was also of streptococcic origin. It was proposed to test this by lumbar puncture, but Dr. Sachs preferred not to, as there seemed to be danger by lessening the pressure within the spinal canal of generalizing the streptococcic process. The most interesting feature of the case is that the girl's life was not only preserved but there was some return of function in the leg movement, which had been lost. The severity of the symptoms, together with the inevitable diagnosis of its streptococcic etiology, seemed to justify the most unfavorable prognosis.

Spinal Ischemia.—Dr. Wm. H. Welch, of Baltimore, said in discussing Dr. Sachs' paper that sometimes there seemed to occur a contraction of the arteries supplying special segments of the cord producing a true ischemia and that such an incident led to softening, if there was persistence of the condition, and also to the development of a set of symptoms closely resembling those of transverse myelitis of infectious or other origin. The distribution of the spinal vascular system was for purposes of protection of the delicate nerve substance and such that this accident became possible under certain circumstances.

Infectious Neuritis and Myelitis.—Dr. James J. Putnam, of Boston, presented the details of some cases

of infectious myelitis which showed the insidious nature of this affection and its tendency to get well at times under conditions that would seem to justify the worst prognosis. The advance of paralysis upward was sometimes to such an extent that even respiration was ultimately interfered with. The paralysis is, however, more commonly confined to the legs.

Cerebrospinal Meningitis Epidemic in Children.—Dr. Henry Koplik, of New York, said that this subject is now of special interest, owing to the occurrence of various foci of the disease in many parts of the country. Certain symptoms that have been recently described are of value for the differential diagnosis, others are not. The Babinski toe reflex, for instance, is usually not present in epidemic cerebrospinal meningitis, while it is usually present in tuberculous meningitis, thus constituting a valuable aid to diagnosis. The Kernig sign is not of special significance. Papillitis is quite common in tuberculous meningitis and is very rarely seen in cerebrospinal fever. This supplies some of the most valuable differential criteria between the two diseases. The leucocyte count of cerebrospinal meningitis is invariably very high, on the average above 24,000, while in tuberculous meningitis it is present but is much lower. The height of the leucocyte count has no special significance for prognosis, however. The *Diplococcus intracellularis* of Weichselbaum is found to be present in most cases. A comparatively low leucocyte count is found in certain forms of the disease, in which at autopsy the lesions are confined to the occipital region. These cases have lately been separated from the others by Still and the symptom-complex he suggested seems justified by further investigation.

Treatment by Lumbar Puncture.—Dr. Koplik considers that lumbar puncture should be a routine treatment especially in very young children suffering from the disease. The evacuation of some cerebrospinal fluid always brings with it some relief of symptoms, such as coma, and in the interval of better feeling thus occasioned there is not infrequently established a direct tendency to cure. A better proportion of those treated by lumbar puncture recover than of those not so treated in Dr. Koplik's experience. His paper will appear in full in an early issue of the Medical News.

Spasmodic Stricture of Esophagus.—Dr. James Tyson, of Philadelphia, described a case of cardiospasm in which the patient, though not suffering from any gross pathological condition in the esophagus, find it extremely difficult to swallow. After food had been taken and apparently swallowed the patient felt a lump behind the lower end of the sternum. Unless this was relieved by forcing into the stomach the food would later be returned by regurgitation. The method of forcing consisted of drinking rapidly large quantities of fluid. On one occasion Dr. Tyson saw the effort required at the end of a meal. The patient drank in large gulps about eight ounces of hot tea, about eight ounces of cold milk and then, finally, about six ounces of cold water, after which by a supreme effort the food entered the stomach. Dilatation of the cardiac end of the esophagus by means of an instrument resembling certain urethral dilators was attempted and with some success. The instrument was passed into the stomach, closed and then drawn out open. The patient complained of great discomfort associated with these manipulations, however, and refused to have it repeated. The spasm recurred and gastrostomy was performed.

Cardiospasm, Idiopathic; Dilatation of the Esophagus.—Dr. B. W. Sippy, of Chicago, presented the specimens from a case of cardiospasm, showing great dilatation of the esophagus so that instead of 100 c.c., as is normal, it held 500 c.c. of fluid. Just about the cardiac orifice the fibers, circular and longitudinal, of the esophagus had become hypertrophied to at least six times their normal thickness. There was no stricture of the esophagus at any point and apparently no cause for the cardiospasm and dilatation. The patient was a physician's wife and the condition at first was thought to be pyloric stenosis with vomiting. No narrowing of the pylorus could be found. The presence of the destructive condition in the esophagus was detected by Dr. Sippy *intra vitam* but the patient was too far gone to be improved. The X-ray picture of the esophagus with the use of bismuth had especially aided in the diagnosis of esophageal dilatation.

Record Esophageal Dilatation.—Dr. Francis Kinnicutt, of New York, then presented the specimens from a case of dilatation of the esophagus which are the largest on record. The esophagus held 1,800 c.c. of fluid, eighteen times the normal amount. There was in this case also a dilatation of the stomach. No adequate cause could be found for either, though the presence of some narrowing of the pylorus might account for the gastric condition.

At the banquet a series of lantern slide illustrations of certain recently described parasitic protozoa were exhibited.

Protozoa of Scarlet Fever.—Dr. F. A. Mallory, of Boston, demonstrated the appearances in the skin in early stages of scarlet fever which he has recently described and which seem to be evidence of the presence of protozoa, the probable cause of the disease. The most striking of these appearances is a rosette-shaped body not unlike a similar appearance seen in the life cycle of the malaria parasite just before the *Hematozoon malariæ* of Laveran breaks up into the smaller bodies that constitute the second generation of the malarial parasite. The appearances seen in scarlet fever are best observed on the second day of the cutaneous rash. They usually occur within the epithelial cells but have been observed also in the lymph spaces in the corium. These observations seem to demonstrate that the appearances are not those of degeneration in the epithelium, since they occur also outside of the cells. The rosette form of the scarlet fever protozoon is about one-third larger than the malarial parasite of the tertian variety.

Proof Not Degeneration Phenomena.—Some of the slides show the parasite also within epithelial cells in which mitotic figures are to be seen. This indicates an active healthy division stage of the cell and would seem to preclude all idea of degeneration being the cause of the appearances degeneration and multiplication by mitosis being incompatible in the same cell. Besides the parasite does not take the stain of degenerative material, but the vivid coloring of living material. Certain of the stages of the parasite are very small and apparently have ameboid movements.

Trypanosomiasis Multiplex.—Dr. Frederick G. Novy, of Ann Arbor, Mich., then demonstrated the various forms of trypanosomes. For a time it was thought that there was only one type of trypanosome, but recent investigations have shown that there are many, some pathogenic for one animal, some for another. The surra of the Philippines and of South Africa are two distinct diseases. There is besides a South American trypanosome. In this country certain rats are affected by a special trypanosome which is not pathogenic for rabbits. Dr. Novy showed the special peculiarities of the various trypanosomes, some larger and slender with a large undulating membrane, some shorter and thicker, with flagellate terminations. A knob-like termination to the flagella characteristic of one form that does not occur in others. While belonging to the same family

with many appearances in common and a similar method of division there are separate forms requiring special study.

Chloroma and Eosinophilia.—Dr. George Dock, of Ann Arbor, Mich., exhibited some slides from the blood and various tissues of a case of chloroma in which many large eosinophiles, filled with characteristic granulations, were to be seen. Some of these cells showed degenerative areas with vacuoles and very irregular grouping of the granular material. Large lymphocytes with but a narrow area of protoplasm were also present, some of them of small size seemed to be incompletely developed, many of the large eosinophiles seem to be myelocytes; that is, cells of bone-marrow origin, and are apparently the result of a natural but unsuccessful reaction to some irritant in the circulation.

Second Day—May 11th.

New Members.—The following nominees recommended by the Council for membership were elected: Philip King Brown, of San Francisco; Joseph Collins, of New York; David L. Edsall, of Philadelphia; Frederick Gault Finley, of Montreal; Hermon C. Gordinier, of Troy, N. Y.; Richard M. Pearce, of Albany, N. Y.; Mark W. Richardson, of Boston; Richard P. Strong, of the U. S. Army .

The following were elected as honorary members: Beverly Robinson, of New York; Starling Loving, of Columbus, Ohio; Henry G. Walcott, of Boston, Mass.

The following nominations for office, made by the Councillors were accepted and the officers for the next year are, for President, Edward L. Trudeau, of Saranac, N. Y.; Vice-President, Frank Billings, of Chicago, Ill.; Secretary, Henry Hun, of Albany, N. Y.; Recorder, Solomon Solis-Cohen, of Philadelphia, Pa.; Treasurer, J. P. Crozer Griffith, of Philadelphia, Pa.; Councillor, F. Forchheimer, of Cincinnati, Ohio; Representative in the Executive Committee of the Congress of American Physicians and Surgeons, William Osler, of Baltimore, Md.; Alternate Representative, Francis H. Williams, of Boston, Mass.

(To be Continued.)

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, held March 14, 1904.

The President, Thomas E. Satterthwaite, M.D., in the Chair.

Symposium on Dilatation of the Stomach, Gastroptosis, and the Methods of Physical Diagnosis.—This was opened by Dr. Robert Coleman Kemp, who said it had unfortunately been too often the habit to depend on the examination of the stomach contents alone, and to neglect the investigation of the motor functions and the position of the stomach itself. The latter is necessary in order to arrive at an accurate diagnosis, as well as give a correct prognosis and undertake proper treatment.

Atony of the Stomach.—This must necessarily first occur before dilatation of the stomach is produced. Atonia gastrica may be defined as a loss of tone or contractile power in the muscles of the stomach, so that the organ becomes distended and does not contract about its contents, with a resulting motor insufficiency. While the dilatation of the stomach in gastroptosis is disputed by some, his own observations have shown that dilatation does exist, and with it, necessarily, a varying degree of motor insufficiency.

Dilatation of the Stomach.—Boas has demonstrated that an apparently dilated stomach may really be in a condition of compensatory hypertrophy. It may, therefore, be stated that as long as the functions of the organ are normal, the condition met with cannot be regarded as pathological. In dilatation the lesser curvature maintains in general its relation to the diaphragm, and this is the differential point between dilatation and gastroptosis. A number of forms of acute dilatation have been described. The first is the result of acute inflammation of the gastric mucous membrane. It is uncertain whether it depends on pyloric spasm or paralysis of the gastric muscles, or on both these causes. The second is a postoperative dilatation, following abdominal section, especially. It would seem to be due to some shock of the sympathetic system, either from the operation or the anesthetic, or possibly, later, from uremia or sepsis. Among the other types of acute dilatation mentioned are the following: In typhoid fever; during attacks of migraine and just preceding epileptic seizures in certain instances; during the course of pneumonia and other pulmonary diseases; in convulsions in infants and young children from overloading the stomach; in attacks of pseudo-angina pectoris from indiscretion in diet.

Chronic Dilatation.—Overfeeding and chronic indigestion are undoubtedly causes of dilatation of the stomach in infants and young children. Holt believes intestinal putrefaction exciting convulsions in young children to be an important factor in the production of epilepsy. Dr. Kemp regards acute dilatation of the stomach with convulsions as an equally powerful factor, when frequently repeated, in producing the convulsive habit, and thinks that some cases of epilepsy can certainly be attributed to this cause. Moreover, chronic dilatation of the stomach is itself one of the causes of intestinal putrefaction and disturbance. Among other etiological factors of chronic dilatation are chronic gastritis, atony of the stomach, rapid bolting of food, spasm of the pylorus due to gastric ulcer, and benign and malignant pyloric stenosis. Each case should receive the special treatment called for by the existing conditions. Dr. Kemp washes out the stomach often only in cases in which there is chronic gastritis with the production of considerable mucus, or when there is much retained food with fermentation.

Gastroptosis.—If gastroptosis exists, some enteroptosis necessarily accompanies it. The determination of the position of the stomach, in order to secure the best kind of treatment, is of great importance, and transillumination of the stomach he considers the ideal method for accurate diagnosis. The treatment consists in the following measures: (1) The correction of the functional derangement of the stomach by appropriate diet and medication; (2) regulation of the bowels; (3) mechanical support to increase the intra-abdominal tension, such as (*a*) various silk abdominal supporters; (*b*) bandages (as the Van Valzah-Hayes' method); (*c*) Gallant's corset; (*d*) Rose's plaster belt. He had seen some brilliant results from the last named. Recently he had employed for this belt rubber plaster on moleskin. The sweat evaporates through it on account of its loose texture, and it can be worn for quite a long time with practically no irritation.

Cases at the Manhattan State Hospital, Ward's Island.—Dr. Kemp presented colored diagrams made from forty epileptics in these institutions. The anatomical regions were marked out in blue pencil on the abdomen of each case, and during transillumination of the stomach the outlines of the organ were drawn in color. These markings were reproduced in the diagrams shown. Thirty-four of the patients were females. In 16 there was gastroptosis, in 16 dilated stomach, and in 2 the stomach was in normal position. In the 6 males

there were 5 dilated stomachs, while in 1 the stomach was in normal position.

Comparative Methods of Locating the Position of the Stomach.—Having stated that the standing posture was in general the most favorable for examinations, he spoke of changes in the position of the stomach due to ingesta. In the books it is stated that the empty stomach lies for the greater part of its extent beneath the ribs on the left side, extending a short distance below them, that when partially full it descends midway between the ensiform process and the umbilicus, and that when full it comes to within a few finger-breadths of the umbilicus. All this is true when the subject is in the dorsal position, since the suspensory ligaments of the stomach are relaxed, and as the organ fills up it gradually gravitates downward. In the standing position, however, as can readily be shown, the stomach, even when empty, at once descends to the full length of its suspensory ligaments, and its lower border is at a constant level, or within about an inch of the same, whether the organ be full or empty.

The Stomach Whistle.—To demonstrate this, Dr. Kemp devised a simple instrument known as the "stomach whistle," which consists of a rectal tube of small caliber with a whistle in the end. To it is attached an ordinary aspiration bulb without valves. The tube is inserted, the finger placed over the open end of the bulb, and a single bulbful of air forced into and aspirated out of the stomach by short and intermittent contractions. This entirely eliminates the possible chance of distending the stomach with air, and the organ remains practically empty. A stethoscope is placed on the abdomen, and the point of greatest intensity of sound is marked by a cross with a colored pencil. The tube is pushed in and out, and various points of sound are marked. The lowest is the lower border of the stomach. If gastrodiaphany is then performed, it will be found that the lower margins absolutely correspond. This is also a further evidence of the accuracy of the latter method.

Various methods of locating the stomach were tried on the same cases and, as a check, transillumination was employed as the last procedure in each instance. (1) Inspection was tried many times, but without success. (2) Carbonic acid gas often failed, and it was found impossible to regulate the amount of gas produced by the sodium bicarbonate and tartaric acid. (3) By administering small quantities of these drugs, with the patient standing, it is possible in a certain number of cases to map out approximately the lower margin of the stomach by listening with the stethoscope to the sound of the effervescence. (4) Inflation with air is advised by many authorities. The method may, however, sometimes cause great discomfort. It is liable to overdistend the stomach, and may even be a source of danger. On many occasions what was apparently stomach becoming protuberant on the abdominal wall was shown by transillumination to be intestine forced out laterally and forward by the stomach. (5) Simple percussion in various positions. (6) Auscultatory percussion. (7) Reichmann's auscultatory percussion rod. (8) Inflation with water seems to be a fairly good method, as it is easier to differentiate between dulness and tympanites than between the different forms of tympanites. (9) Inflation of the intestines with air is inaccurate. If water is employed, its acts as an enema. (10) The ideal method is transillumination, originally devised by Einhorn. As an improvement in technic Dr. Kemp has of late employed fluorescent media. By means of these he has found it possible to transilluminate the stomachs of fat subjects, which were formerly unsatisfactory, and, in general, the transillumination is increased nearly one-half. As a matter of scientific exactness, Dr. Kemp suggested the infusion of radio-active saline solutions into animals and also their hypodermatic use. The experiments made, however, showed no results from the standpoint of physiological medicine, and at present he felt that such solutions have no therapeutic value whatever.

The Relations of the Stomach to Auto-infections.—Dr. Wm. H. Thomson said he would confine his remarks to the relations of the stomach to certain auto-infections which seem to be chiefly caused by changes in the tone and motility of the stomach walls, which changes appear to be closely connected with the etiology of some common nervous derangements. In the first place, when a nervous disorder is intermittent, it may be assumed that it is one due not so much to a neurosis as to a toxemia. He had no doubt that the great majority of the attacks of epilepsy are primarily due to a toxemia. Nervous symptoms dependent upon organic changes are never intermittent, and while it is true that in some cases of epilepsy there is a persistent source of irritation in the form of an organic change produced by traumatism or a localized lesion, yet even here the attacks are intermittent; which could not possibly be the case if the traumatic irritant were the sole cause. Therefore, even in traumatic epilepsy something else besides the standing local irritation is required to develop the convulsive paroxysm, and that something is most certainly one of the forms of toxemia. He believed that in time a case of so-called idiopathic epilepsy may acquire an organic basis, on the principle that every nervous function which is not original to the cerebral cortex, but is acquired, has an anatomical basis there after the function has been acquired. Now apply this principle to nervous pathology. In the brain-training period of childhood let us suppose that an abnormal or diseased habit is being contracted by the special and selective operation of some blood-poison on a special cortical area. It is only consistent with general law that such poison may in time, by repeatedly acting on the same area, finally cause an anatomically organized area of morbid activity. While not denying that congenital malformations may in some instances be the origin of epilepsy, it may be inferred that the great majority of epilepsies are acquired. Hence the extreme practical importance of preventing epileptic attacks from becoming habitual, and, in order to accomplish this, of making every possible effort to discover the exciting causes of the attacks. Dr. Thomson said his criticism of the current views of the mechanism of an epileptic seizure was that it is looked upon as a primary discharge of cortical motor cells. But no motor cell ever discharges itself; it is invariably in response to some afferent excitation alone that such a discharge can occur. When we seek for causes of undue afferent excitability, it is only in toxemias that we find the most conclusive illustrations, and this should lead us to attach great importance to every means which will enable us to be more precise in our examination of the organs most concerned in causing auto-infection. Gastric atony and dilatation, for example, always imply not only deficiency of muscular power, but also qualitative changes in the normal secretions of the stomach; and it should never be lost sight of that all digestive secretions are also powerful antiseptics, so that deficiency or perversion of these of itself disposes to self poisoning. He welcomed, therefore, all measures which tend to improve our means of diagnosis.

Gastrodiaphany, or Transillumination of the Stomach.—Dr. Max Einhorn said that the great advantage of this method is that it affords an opportunity of examining the stomach in the natural state, and not when it is overdistended, as by gas. A great many mistakes

have been made in consequence of such overdistention, and the method of using effervescing mixtures is attended with some danger. Gastrodiaphany is undoubtedly a good method, but it is rather an elaborate one, requiring a dark room, an electric battery, and a special apparatus. It is particularly useful for gastroptosis and when tumors are present. For the general practitioner he thought the most serviceable method was the production of a splashing sound when the stomach is partially filled with liquid. This, he believed, affords the most accurate means of ascertaining the situation of the stomach and also the outlines of the organ. He would, therefore, place it first as a means of diagnosis.

Dilatation of the Stomach.—Dr. Geo. R. Lockwood said that if a stomach in the morning fasting state habitually contains food remains, or if it contains a greater amount of gastric juice than 100 c.c., it may reasonably be assumed that pyloric obstruction exists, no matter what the actual size of the stomach may be. We find large stomachs that are not to be considered as "dilated," since they are adequate in a muscular sense and empty themselves as they should; on the other hand, there are stomachs of normal or diminished size which are muscularly inadequate and do not properly empty themselves. The latter may be regarded clinically as dilated stomachs, although they are not dilated. To determine absolutely the actual size of the stomach we need to locate the two curvatures and the overlapping of the stomach area to the right of the median line. The lower curvature can be readily made out in the great majority of instances. In Dr. Lockwood's experience the results of gastrodiaphany have been most misleading, and he has of late excluded the method from the list of available means for diagnosis. He has obtained the most accurate results from inflation, combined with palpation and inspection; and next in order of value he would place the area of succussion sounds obtained. With an oblique light shining back of the recumbent patient, the shadow outline can usually be distinctly seen. If the upper curvature is not observed descending on inspiration, with the respiratory descent of the greater curvature, the diagnosis of an enlarged stomach can be made with reasonable certainty, and gastroptosis excluded. Inflation should regularly be practised by pumping air into the stomach through a tube, and not by the use of effervescing powders. In cases where such an inflation is inadvisable, a moderate inflation by effervescing powders may be made, and light percussion, preferably by auscultatory stroke percussion, employed. By observing changes in note before and after such inflation, colon tympany need not be mistaken for gastric. The area over which succussion sounds are heard affords very reliable evidence as to the position of the lower curvature. This sign is fairly accurate, provided there be no liquid in the transverse colon; a point which may be determined by tapotement in the cecal region. In normal cases the gastric tympany rarely extends beyond 6 c.c. to the right of the median line. An extension of the tympanic area to 8 c.c., or more, affords fair presumption of enlargement.

The detection of the upper border of a normally located stomach is almost an impossibility. Consequently the exact vertical dimension can rarely be determined. The estimation of the exact size is further rendered difficult by displacement downward of a dilated stomach, or its assumption of the vertical position. He thought the mistakes in diagnosis dependent on two errors: (1) In basing a diagnosis on the location of the greater curvature alone, forgetting that it might be a gastroptosis alone, or a displacement coexistent with a dilatation. (2) In making a diagnosis of dilatation from the size of the stomach alone; the sole sign of dilatation that is accurate being the detection of food remains or of contained secretion in a fasting stomach. No diagnosis, therefore, can be made without careful and, if necessary, repeated examinations of the gastric contents in the fasting state.

Gastroptosis.—Dr. Achilles Rose thought this term unfortunate, and preferred *gastroptosia,* which, correctly translated means abdominal tosis, not necessarily ptosis of the stomach alone. Gastroptosia also has the advantage of including the relaxation of the abdominal walls. Relaxation of the abdominal muscles forms a factor in gastroptosia, and it is the first factor we have to consider in therapy. Those who have used the term *atonia gastrica* in the sense of motor insufficiency of the stomach had caused much confusion, since atonia gastrica may exist without such insufficiency. Gastroptosia is identical with relaxation, and constitutes atonia gastrica. Atony may cause motor insufficiency, or, in turn, may be caused by insufficiency; but it may exist without insufficiency when the resistance at the pylorus is subnormal. Gastroptosia is never present without dilatation. Gastroptosia depends on relaxation, and relaxation of the fibers of muscles means elongation of the fibers; therefore relaxation is, *eo ipso,* dilatation. Many cases which were formerly classified as neuroses are now recognized as instances of gastroptosia with gastric and nervous symptoms. All forms of anomalous gastric secretion may be associated with gastroptosia, and prompt relief from such abnormal secretions and from motor insufficiency may often be secured by proper treatment of this condition.

Treatment.—In the treatment of gastroptosia the principle to be kept in view is relief from relaxation, and, first of all, from abdominal relaxation, by means of mechanical support of the abdominal walls. This can best be given in most instances by strapping in the way that has been suggested by Dr. Rose. Very often strapping alone, without any other treatment, will restore the secretory and motor functions of the stomach to a normal state. Gastroptosia may play a part in diseases of the organs of respiration and circulation, and in illustration he quoted a cardiac case reported by Groddeck. Dr. Rose said he could cite just as striking examples from his own experience, or he might refer to a patient he had seen under examination before a medical society. Everyone present studied the auscultation and percussion signs, but not a single physician took notice of the most remarkably pronounced gastroptosia existing. They all spoke of various remedies to improve the circulation, but not one had an idea of the most important of all the remedies called for in the case, the support of the abdomen.

The Surgeon's Point of View.—This was discussed by Drs. R. H. M. Dawbarn and George E. Brewer. The latter said the cases for operative interference could be divided into three classes: (1) Malignant disease; (2) benign disease, such as ulcers and, very rarely, tumors; (3) spasm, when surgical rather than medical aid is required; the condition having gone beyond the point when efficient relief can be afforded by medical remedies or mechanical support. In gastric ulcer it is universally conceded that one of the most essential requisites of successful treatment is rest, and there can be no question that in many instances a gastro-enterostomy affords an opportunity for the healing of the ulcer better than can be secured in any other way. The spasmodic conditions produced by ulcers can also be promptly remedied by surgery. The operations for the relief of the various forms of benign disease show a very low rate of mortality. In conclusion, Dr. Brewer made a suggestion as to the importance of the early recognition and early surgical treatment of dilatation in the "cancer age."

The surgeon is now, he said, making much earlier diagnoses of carcinoma than formerly. This is largely due to laboratory methods; but even these do not give the diagnosis in time to do a really radical operation. Whenever, therefore, a person at the cancer age has a sudden onset of digestive trouble, or a sudden increase in such trouble previously existing, suspicion should at once be aroused. An early exploratory incision is attended with a minimum of risk, and if malignant disease is discovered, it can be treated while the affected area is still very limited and glandular involvement has not as yet occurred. Only thus can the disease be reached at a time when it may be thoroughly eradicated, and by the adoption of this plan excellent results are now beginning to be shown.

The Relation of the X-ray and Radio-active Solutions to Examination of the Stomach.—Dr. Sinclair Tousey read a paper on this subject. He said he had repeatedly determined the presence of cancer of the stomach by the use of the X-ray alone. At present he is inclined to rely, in stomach work, more upon the fluoroscopic than upon the skiagraphic examination. Sometimes a tumefied anterior wall or pyloric extremity can be quite positively made out with the fluoroscope, and be merely indicated with a reasonable degree of probability by a skiagraph. In other words, a tumor of the stomach is almost transparent to the X-ray, and, being in constant motion during respiration, is better studied directly. Simple dilatation of the stomach and gastroptosis, without the presence of a tumor, would scarcely be capable of demonstration by the X-ray under ordinary circumstances; and it was with a view to the diagnosis of these conditions that his experiments were undertaken. Having given a résumé of his observations up to the present time, Dr. Tousey said that his conclusions, based on these, were as follows: (1) Radio-active and fluorescent solutions are innocuous when given by the mouth or subcutaneously; (2) they do not produce, either singly or in combination, sufficient fluorescence to be of value in the examination of the stomach without the use of some additional light to excite their fluorescence; (3) they will in some cases be of the very greatest assistance in the X-ray diagnosis of stomach lesions; (4) they will in some cases be of value in the X-ray treatment of stomach lesions.

SOCIETY OF THE ALUMNI OF CITY HOSPITAL.

113th Stated Meeting, Held March 9, 1904.

Erysipelas.—Dr. J. W. Draper Maury exhibited the graphic chart of a case of this disease which had been treated throughout with pure carbolic acid followed by alcohol. The chart showed an unmistakable and very immediate fall of temperature following the application of the acid, the variation in many instances during the five days covered extending over six degrees.

Experimenting with the McGraw Ligature.—He then presented a series of specimens of dogs' and pigs' stomachs and guts illustrating the recent experimental work done at the Surgical Laboratory of Columbia University. He said that at the suggestion of Dr. Weir, about a year ago, he had endeavored to use the McGraw elastic ligature in such a manner as to punch out a piece of the coapted viscera in gastro-enterostomy or in entero-enterostomy. Although the simple McGraw stitch has now been used many times on the human subject with perfect success by such men as Ochsner, of Chicago, and others, there exists a doubt in the minds of some surgeons that as patent and as lasting an orifice can be made with it as is produced by resection of the part at the time of operation or by use of the Murphy button. Dr. Maury believed that the stitch had now been so far perfected as to warrant one in stating with certainty that it would punch out all the material included within it.

Dr. Carter S. Cole, in opening the discussion of these specimens, said that the objection to such cumbersome mechanical devices as the Murphy button and their dangers were well known. He has for many years thought that a simple incision with ligature was better than any other technic. As to the erysipelas chart presented, he said that he was one of the first to use the method, having employed it seven or eight years ago. In his experience of thousands of cases demanding antiseptic treatment at the Hudson Street Hospital, he has found it the safest and surest manner of combating and preventing infection. He said that the time which should elapse between the application of the phenol and the brushing of the parts with alcohol depended on several factors. He cited the case of a shoemaker who, having a pain in his hip, by accident rubbed both hips with a pure carbolic solution thinking it was alcohol. A physician, who arrived twenty minutes after this was done, found both sides deeply eschared. He decided that it was hardly possible to prevent sloughing by the use of alcohol, but for the sake of experiment, painted one side with this fluid. The result was that despite the length of time elapsed, the untreated side went on to slough, whereas the tissue which had been swabbed with alcohol, recovered its normal condition in a few days.

Dr. Thomas F. Riley called attention to the very interesting fact that all the phenol group, when applied to the skin, tended to depress the temperature. Guaiacol and creosote will effect as extensive and as rapid a depression of temperature as phenol. He therefore felt that there was some reason to doubt whether the variations in the chart shown were due to the destruction of the *Bacillus erysipelatous*, as Dr. Maury and others had thought or to the foregoing influence. It was interesting further to note that while the progress of the disease had been checked from passing from the trunk to the thighs by deeply burning the latter with the phenol, nevertheless the infection had spread all over the torso and arms, although the treatment had been used with sufficient vigor to produce blistering in several places.

Dr. J. F. Terriberry said that in his experience tincture of iodine applied locally and croton oil applied internally is a combination which acts very well.

Dr. Cole in answer to some criticisms on the danger of pure carbolic, said that in the Hudson Street Hospital, he and his assistants used it as free as water, and that in his experience of several thousand cases, he never had seen even a suggestion of poisoning from the use of pure acid. The explanation of this is that it destroys the avenues of ingress and therefore is not absorbed by the system as is the case with weak solutions. The time elapsing between the application of the phenol and the swabbing with alcohol is determined entirely by the result which is sought. The drug first irritates, then stimulates, then produces anesthesia and lastly destroys the part. A practised eye can determine when each of these stages is reached.

Dr. Maury, in closing the discussion, said that in using the elastic ligature, it was not necessary to freshen the peritoneal surfaces which it brought into contact, the trauma produced by the technic being all sufficient to cause the parts to adhere very firmly. An interrupted Lembert line of sutures should be so placed as to securely enclose the ligature. The results obtained by the technic at present used in the Surgical Laboratory have been very encouraging.

The Prevention of Diseases of the Accessory Sinuses.—Dr. D. Bryson Delavan read this paper. He said that very special import had been given to this neglected subject by the advent to the city of a pecu-

liarly infectious form of grip. Many of these cases, instead of developing into pneumonia, had insidiously but often seriously involved the accessory sinuses, and he believed that a repetition of warnings previously given by him to the profession would not be out of place. Next to prevention, he said that early recognition and treatment of acute attacks of involvement of the mucous membranes of the respiratory tract were of paramount importance. As elsewhere in surgery, free drainage from the upper half of the nasal cavity is essential in every case. Malformations of the middle turbinated bone and displacements of the septum are among the most frequent causative factors in sinus disease. The exciting causes of sinus disease are varied. Inflammatory change may be brought about in many acute infections such as pneumonia, diphtheria, measles, scarlet and typhoid fever, smallpox, cerebrospinal meningitis, erysipelas and grip. Many cases are undoubtedly directly due to the inhalation of dust in our windy and filthy streets. Wind is due to other causes than to high buildings. Inveterate users of the open automobile are beginning to show that this machine is causing many serious sinus affections. Favorable results can usually be obtained by a prompt and thorough treatment of most cases of sinus inflammation due, as it often is, to the insidious disease known as grip; it should be watched with care and treated from the onset as a disorder likely to produce serious results. As in other conditions satisfactory treatment of the acute conditions will render chronic cases very rare. The principles of treatment are simple, being based entirely upon the conception that the condition arises from retention of secretions through blocking of the outlets. The indication is to drain and to clean. The congested and swollen parts may be contracted by suitable applications and free drainage will result without surgical intervention. A depletion of the nasal circulation is of the first importance. Drugs, however, are by no means the only method of obtaining this end. The heart must be kept quiet, and rest in bed, an even temperature, mild catharsis may all be indicated. Belladonna or aconite, or in cases of severe neuralgia, phenacetin and salol are the author's favorite drugs. The local treatment is of paramount importance and it should be borne in mind that this should be absolutely non-irritating and painless. The secretion should be gently removed from the surface and a spray of two per cent. solution of cocaine thrown upon the mucous membrane affected. After this drug has contracted the lower part of the nasal cavity, a spray of adrenalin or, preferably, a solution of the extract of suprarenal gland may be thrown as far upward as possible. The alternation of these two drugs may be necessary more than once. During the time of contraction of the membrane, there will be free discharge from the sinuses, and although the openings may close within a few hours, the relief afforded is usually sufficient to prevent a chronic involvement. It may be necessary to utilize this method several time a day. In this case the use of cocaine will of course be admissible because of the danger of inflicting the habit. In general the writer concluded that much could be done in the prevention of sinus disease by a recognition of the conditions under which it is likely to occur; by removal or mitigation of these conditions after their detection; by applying immediate treatment to those cases in which acute inflammation had begun.

Dr. D. H. Wiesner said that the subject of this paper could not be treated lightly. The amount of dust in the streets of our great cities is almost inconceivable, and the amount of damage done to our mucous membranes and sinuses is absolutely unknown. He agreed with Dr. Delavan that the use of cocaine for the relief of nasal engorgement was a very dangerous procedure.

Dr. W. B. Johnson said that a great many people suffered from acute attacks of sinusitis which were merely of a catarrhal kind and which, as was well known, in the case of the mastoid, will not go on to suppuration. The suggestions given as to methods of preventing suppuration were very useful. Adrenalin, he said, might in some individuals prove to be a severe irritant, one of his patients having had to sneeze for two hours after a single application of one to one thousand. Crushing the turbinate bone, as has been recommended by some Europeans, is absolutely non-surgical and contraindicated.

Dr. George B. McAuliffe called attention to the very interesting fact that ethmoiditis and probably other sinus invasions could actually be caused by the continued use of cocaine. He emphasized the importance of the element of rest. This is a most potent curative agent for that large class of persons who are unable to see their physician two or three times a day. These people should be put in a semirecumbent position and given aconitia, which is better than aconite, because it can be absolutely graded; one five-hundredth of a grain every hour. He spoke of the dreadful danger of cocaine, and suggested that if it must be used, adrenalin should be employed first, so as to limit the cocaine absorption as far as possible.

Dr. P. B. Hough said that he had not found it necessary to use cocaine in but very few cases, a mild alkaline spray serving the purpose sufficiently well and with less danger.

Dr. Delavan, in closing, said that the general practitioner neglected these cases so extensively that even today cases in which destruction of the organ of special sense had gone on almost to completion, were not rare. While extensive operations for these cases may primarily give good results, ten years later they may prove to be wofully unsatisfactory. He said that the internal use of drugs is undeniably important. For years, professional singers and others have used aconite. As for the cocaine habit, he believed that the uncomfortable period can best be bridged over by suprarenal extract. He considered it better than adrenalin, in that it is less expensive and has not the irritating qualities of the extract.

Personal Experience in the Treatment of Typhoid Fever.—Dr. Carter S. Cole said that it would be idle in the few moments allotted him to give even a summary of this subject. He said that our individuality must be impressed upon our work and it was with this understanding that he presented a view of his experience in treating this all too common and too frequently fatal disease. In 1887, he stated that in his opinion a nurse who was fitted to properly care for a case of typhoid needed no other testimonial to her ability in her profession. Fifteen years of practise have convinced him of the truth of this statement and furthermore that the physician who is abreast of every possibility in that disease is thoroughly competent to care for any conceivable ill of mankind. The author then considered the relation of treatment to temperature. The latter, he said, was a necessity. Every case of typhoid has its own peculiarities, not only in regard to temperature variation but also as to nutrition, intestinal and nervous conditions, etc. One patient has a high fever with an eruption from his neck to his feet; the other never has a temperature over 101° F. and has an almost imperceptible abdominal rash. The one is delirious almost all the time and dies of cardiac failure at the beginning of the fifth week. The other is never delirious but has almost a melancholia from which he does not recover for nearly a year. A child has a frightful attack of typhoid of the high-fever type, with profuse eruption, accompanied by pneumonia in the original attack and by an infection of the large intestine in the relapse. Her nurse contracts

the disease and has a comparatively simple attack, with few spots, with low temperature, her chief difficulty being an ever-present nausea. The first is fatal; the second makes a good recovery.

Dr. W. L. Baner, in opening the discussion of this paper, said that he considered the feeding of typhoid patients the most important part of the treatment of the disease. No more food than can very easily be digested should be given. He did not consider a widely distributed and very marked eruption such as Dr. Cole had described to be necessarily significant in determining a bad prognosis. These cases often do well and it has been noticed that they generally give a very positive reaction to the tests for the disease.

Dr. W. Ridgely Stone considered that temperature alone was but a poor indication for typhoid baths. History repeats itself over and over again in showing that low temperatures in typhoid often end fatally. It is rather the nervous and circulatory symptoms which call for hydrotherapy, the mere question of temperature being a matter of small import.

Dr. Cole, in closing, said that he considered the temperature to be a normal condition and used it simply as a guide for the nervous condition. He considers that the baths are very efficacious in reducing abdominal distention. As to the eruptions, if they be ubiquitious and more or less confluent, which is the type dwelt upon in his paper, the giving of a hopeful prognosis is, in his opinion, a very doubtful procedure.

BOOK REVIEWS.

The Practice of Obstetrics. Designed for the Use of Students and Practitioners of Medicine. By J. Clifton Edgar, Professor of Obstetrics and Clinical Midwifery in the Cornell University Medical College; Attending Obstetrician to the New York Maternity Hospital. With 1221 Illustrations, many of which are printed in Colors. P. Blakiston's Son & Co., Philadelphia.

The increasing interest in scientific obstetrics which has gone hand in hand with the development of gynecology has led to the appearance of numerous excellent treatises on this subject during the past few years. Few medical subjects require so much illustration or lend themselves so readily to pictorial embellishment and modern publishers have not been slow to avail themselves of the opportunities offered for the production of attractive books. It must be confessed, however, that this volume with its twelve hundred excellent pictures puts them all to the blush and stands *facile princeps* at the head of all text-books of midwifery.

The arrangement adopted by the author is a marvel of simplicity and is rendered still more practical by the ingenious system of subheadings in different styles of type consistently carried through the entire book. The subject-matter is divided into ten parts as follows: Physiology of the Female Genital Organs, Physiological Pregnancy, Pathological Pregnancy, Physiological Labor, Pathological Labor, Physiological Puerperium, Pathological Puerperium, The Physiology of the Newly Born, The Pathology of the Newly Born, Obstetric Surgery. A formal section on Anatomy has been omitted since discussions of the gross and minute anatomy of the pelvic viscera appear in appropriate places in the parts on pregnancy and labor.

The work throughout gives evidence of the greatest possible amount of thought and care devoted to the production of a book, detailed and comprehensive yet practical and convenient for reference, at the same time useful to the student and to the clinician. The statistical data on which the author's conclusions are based include 2,200 cases from the New York Maternity Hospital and from the Mothers' and Babies' Hospital.

In many ways the book differs from the stereotyped form of obstetrical treatise and gives information of a type often slighted in the standard works. Such for example is the section on monstrosities which contains 144 illustrations of the different forms of abnormalities encountered. Other chapters to which the author evidently attaches considerable importance are those on the diseases of the newly born, pelvic deformity, obstetric surgery, cephalometry and the mechanism of labor.

Of the very numerous illustrations little but praise can be said. They have been chosen with remarkable discrimination and form one of the noteworthy features of the book. In spite of their large number they nearly all serve a distinct purpose though the captious might perhaps think that figures 190-195 which depict respectively, properly and improperly groomed fingernails, pushing back the cuticle with an orange stick, the orange stick, cleaning the nails with a towel, a hand in a rubber glove and a commerical can each of washing soda and chlorinated lime, do not represent concepts so foreign to the mentality of the average medical reader as to require graphic representation.

It is a great pleasure to be permitted to call attention to what undoubtedly is, and probably will long remain, our foremost handbook of obstetrics.

Medical Union Number Six. By William Harvey King. The Monograph Press, New York.

This is a pamphlet written supposedly to show to what absurdities and even loss of life trades unionism would go if pushed to an extreme. Just why the author should have made the medical profession the butt of his observations is hard to understand. The book is not likely to have any influence either for or against the important principles that underlie union for the purpose of securing due rights and which, like every other good thing in life, may and will be abused, but from the abuse of which no argument holds against the proper use.

The Treatment of Fractures. By C. H. Scudder, M. D. Fourth Revised Edition. W. B. Saunders & Company, Philadelphia, New York and London.

The appearance of the fourth edition of this work within a period of four years testifies to its popularity and value. As stated in the author's preface, the book is intended to serve as a guide to the student and practitioner in the diagnosis and treatment, and the latter is illustrated as thoroughly as possible. Mechanical simplicity is advocated. Recognized essentials are an exact knowledge of anatomy combined with accurate observation. A prominent feature of the book is the wealth of illustrations, of which the greater part are from new and original drawings and photographs. The hackneyed cuts of common fractures and dislocations which constantly find a place in one book on surgery after another, are wisely omitted and their place taken by newer and better representations. Naturally X-ray pictures play an important part, and especially interesting are those of the epiphyses at different ages. The question of treatment is very fully considered, the details in the various steps of reduction and the application of splints being in many cases depicted in a series of illustrations. A valuable chapter on X-rays and their interpretation, by Dr. Codman, is appended and also one on terial infection, and are therefore less misleading. The application of the plaster-of-Paris bandage, containing many new and valuable hints.

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ORIGINAL ARTICLES.

LESIONS PECULIAR TO THE PANCREAS AND THEIR CLINICAL ASPECT.[1]

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To the clinician the characteristic feature of pancreatic disease is doubtless the obscurity of its symptoms. Though the gland is one of the most important organs of the body, subserving a considerable variety of diverse functions, extensive destructive changes are often unaccompanied by recognizable symptoms. This obscurity is due to a variety of causes. The organ is situated in contact with the vertebral column and unlike the liver is rarely palpable either in health or disease. The secretion elaborated by the pancreas plays an important part in the digestion of proteids, fats and carbohydrates, yet only when the pancreatic juice is wholly or almost wholly prevented from reaching the intestine does the resulting disturbance of digestion give indication of pancreatic disease. Occlusion of the bile duct causes the accumulation of bile in the tissues and its excretion in the urine, but occlusion of the pancreatic duct causes neither the accumulation nor excretion of any product which is so readily recognized as the bile pigments. Grave lesions of the pancreas are accompanied by the disorder of carbohydrate metabolism, diabetes mellitus, but the diagnostic value of glycosuria is modified on the one hand by the occurrence of diabetes without disease of the pancreas, and on the other hand by the absence of diabetes with many lesions of the gland.

Recognition of pancreatic disease is further complicated by the fact that lesions of the gland are seldom primary, but are dependent upon changes in other organs, notably in the duodenum, liver or bile passages. Nevertheless, the knowledge that certain lesions of the pancreas are frequently found in association with more readily recognizable conditions will in many instances give evidence that the gland is diseased. An understanding of the peculiar pathology of the pancreas and of its relation to that of other organs is therefore essential to the diagnosis of pancreatic disease.

The pancreas, unlike all other glandular organs, consists of two elements which differ so much in structure and function that it is necessary to consider separately the diseases which affect them. Secreting cells which elaborate the ferments of the pancreatic juice are in communication with a system of ducts carrying the products of secretion to the duodenum. Embedded among the secreting acini are small round bodies which can barely be recognized by the naked eye. The cells which form such bodies, differ from those of the secreting acini; they do not communicate with the ducts, and take no part in the manufacture of the pancreatic juice. They are, however, in intimate contact with dilated capillary vessels, and abundant evidence has shown that through the medium of the blood they exert an important influence upon metabolism. These structures which resemble certain other ductless glands, the parathyroid bodies, the adrenals and the thyroid gland, are the so-called islands of Langerhans.

Diseases of the pancreas, therefore, may be conveniently separated as follows: first, those which affect the secreting apparatus of the gland and, second, those which have their seat in the islands of Langerhans and interfere with the influence which these structures exert on carbohydrate metabolism.

Before considering those lesions which affect the secreting apparatus of the gland I will mention certain recently demonstrated facts concerning the physiology of the pancreatic juice, the so-called external secretion of the organ. Even though their bearing upon clinical medicine and upon pathology may not as yet be evident they serve to show the complexity of the pancreatic functions.

Most important are the observations of Pawlow and his pupils. The pancreatic juice contains three ferments which have a preeminent part in the digestion of the three most important constituents of the food. In the cells of the pancreas the precursors of these ferments exist as zymogens, so that an extract made from fresh pancreatic tissue is capable of digesting proteid only after the contained zymogen has been converted into trypsin. Pancreatic juice obtained from a pancreatic fistula in the dog is capable of only weak solvent action upon proteid material. Schepowalnikow, a pupil of Pawlow, has shown that the intestinal secretion, the succus entericus, to which heretofore little significance has been accorded contains a ferment which acting upon the pancreatic juice enormously increases its power to digest proteid substances, such as fibrin or coagulated egg albumin. Pawlow believes that the proteid-digesting ferment of the pancreatic juice is excreted in the form of inactive zymogen which is converted into active trypsin by the action of a second ferment contained in the succus entericus of the duodenum. To this ferment of a ferment, as he describes it, he has given the name enterokinase.

Enterokinase, moreover, exerts an augmenting action upon the fat-splitting ferment of the pancreatic juice, but here comes into play a second

[1] Presented February 4, 1904, before the New York Academy of Medicine, at a meeting devoted to the consideration of Disease of the Pancreas.

factor which has an important bearing upon the etiology of acute hemorrhagic pancreatitis and the associated fat necrosis. Bruno another pupil of Pawlow has emphasized the fact, already known, that the bile affords a favorable medium for the action of the pancreatic ferments and particularly of the fat-splitting ferment, which may be increased in efficiency two or threefold. This favoring action of the bile is due to its chemical constitution and not to a ferment like enterokinase. Pawlow and his pupils have clearly demonstrated the important fact that the activity of the pancreatic juice is in considerable part dependent upon the secretions with which it comes in contact after it has entered the intestine.

A consideration of pancreatic disease may well be introduced by a few remarks concerning the effect of pancreatic juice diverted from its proper channels into the tissues about the organ. When the common bile duct is occluded, bile is dammed back upon the liver and is transported to all parts of the body. Jaundice is readily recognizable because bile pigments are present in the conjunctiva and in the skin, while the characteristic color and certain chemical reactions readily establish their presence in the urine. When, however, the secretion of the pancreas is diverted from its normal channel, no pigmented constituent gives evidence of its presence in the tissues, nor have we, as yet, any certain means of demonstrating the presence in the urine of substances formed in the pancreas.

Nevertheless, pancreatic secretion which has found its way into the tissues causes a characteristic lesion, but since this lesion is usually confined to the adipose tissue of the abdominal cavity it has diagnostic significance only to the surgeon who opens the abdomen. I refer to the so-called fat necrosis which occurs only in association with disease of the pancreas. Circumscribed opaque white foci of necrosis are conspicuous upon the translucent yellow fat of the omentum, of the mesentery, and below the parietal peritoneum, and are recognizable as soon as the peritoneal cavity is opened. In the neighborhood of the pancreas necrotic areas are large and often confluent. In cases where the lesion is recognized examination of the organ at operation reveals one of a variety of changes. Acute hemorrhagic pancreatitis is most frequently associated with fat necrosis; suppurative pancreatitis is less commonly found accompanying it. Fat necrosis may accompany chronic interstitial pancreatitis, or obstruction of the pancreatic duct caused by biliary or pancreatic calculi, or by carcinoma compressing the duct. In order to explain the relation of fat necrosis to these various lesions it is necessary to briefly describe its pathogenesis.

Langerhans showed that death of the fat cells is associated with the splitting of their contained fat into glycerin, which being soluble is carried away, and insoluble fatty acids, which remaining are recognizable within the dead fat cells. Flexner was able to demonstrate in the foci of necrosis a fat-splitting ferment which is doubtless identical with that of the pancreatic juice. That necrosis of fat is in reality caused by the penetration of pancreatic juice into the tissues is well illustrated by the following experiment: When in the cat both ducts of the pancreas are securely ligated, death with necrosis of almost the entire abdominal fat results within several weeks, being caused presumably by pancreatic juice which is dammed back upon the gland. If after the ducts are ligated pilocarpine, which stimulates the pancreatic secretion, is administered to the animal, fat necrosis of the same extent results within several days. Moreover, those lesions of the pancreas which cause fat necrosis are such as favor the penetration of the pancreatic ferments into the tissues about the pancreas.

Fat necrosis for the surgeon may often serve as an index to pancreatic disease and recognized during the course of an exploratory laparotomy has not infrequently explained an otherwise wholly obscure case. In the majority of instances fat necrosis implicating the omentum, the mesentery and perhaps the fat of the parietal peritoneum, is caused by the condition known as acute hemorrhagic pancreatitis.

Acute hemorrhagic pancreatitis primarily affects the secreting apparatus of the pancreas and is doubtless in all instances dependent for its origin upon the peculiar anatomical and physiological characters of the gland. The disease is uncommon, but of such severity that death may result within forty-eight hours after the onset of symptoms. In the more typical cases an individual, often in good health, who perhaps has suffered with previous attack of abdominal pain is suddenly seized with intense pain in the epigastrium, soon accompanied by uncontrollable vomiting, and followed by very profound collapse. The localization of the pain and the severity of the symptoms are the most characteristic features of the disease and in a certain number of cases make a diagnosis possible. Not infrequently the symptoms, though of the same character, are less severe, the individual survives several weeks, abdominal pain continues, and an ill-definable tumor mass appears over the region of the pancreas. Septic fever, leucocytosis and other evidence of suppuration give indication of a peripancreatic abscess limited by the lesser peritoneal cavity.

Examination of the pancreas of individuals who have died within three or four days after the onset of such symptoms shows the characteristic lesion of acute hemorrhagic pancreatitis. The organ is very greatly enlarged and infiltrated with blood, which soon assumes a reddish black or black color. Microscopical examination shows that the tissue of the gland has in great part undergone necrosis. Study of the etiology and pathology of this remarkable condition has added an important fact to its somewhat obscure symptomatology.

A review of cases contained in the somewhat voluminous literature of the subject has shown that a considerable proportion are associated with gall-stones present in the gall-bladder or in the bile passages. I have collected 41 such cases

from the literature, and doubtless in many other instances their presence has been overlooked or unrecorded. In four of five cases which have come under my observation gall-stones have been present.

A case which I have described and since frequently cited serves to explain the relation between cholelithiasis and acute hemorrhagic pancreatitis. Examination of the pancreatic and common bile ducts in this case has pointed to a mechanism capable of causing the lesion, and clinical and experimental observations have clearly shown that this mechanism is the etiological factor in many, if not in all, cases. The larger duct of the pancreas, the duct of Wirsung, and the bile duct, it is well known, join before entering the intestine and in most cases form a short common channel known as the diverticulum of Vater. In the case referred to a small gall-stone had so lodged at the orifice of this diverticulum that it had converted the two ducts into a continuous closed channel from which neither the bile nor the pancreatic juice could escape. Bile had penetrated into the pancreatic duct, doubtless injected as it were by the gall-bladder, and had caused characteristic staining of this duct by bile. The pancreas was the seat of extensive hemorrhagic necrosis.

A review of 41 reported cases in which gall-stones have been found in association with acute pancreatitis, has shown that in seven instances a calculus was lodged at the duodenal orifice of the common bile duct so that, as in the case I have described, mechanical conditions favored the penetration of bile into the pancreas. In a case of acute hemorrhagic pancreatitis, reported by Dr. Thayer, the orifice of the diverticulum of Vater was much dilated and the calculus which had been recently expelled was found within the lumen of the duodenum. Doubtless in many instances the calculus lodges only temporarily within the diverticulum of Vater and escapes into the intestine.

It has long been known that a variety of irritant substances including various acids and alkalies injected into the pancreatic duct of animals causes typical hemorrhagic pancreatitis with disseminated fat necrosis, but there is little probability that such substances ever enter the duct in man. Directed by the suggestion which the foregoing cases offer I have performed a series of experiments to determine if bile injected into the pancreatic duct can cause the lesion. Typical hemorrhagic pancreatitis accompanied by disseminated fat necrosis has resulted when the bile of one dog has been injected into the pancreatic duct of a second. The result is not surprising, since the number of irritant substances which produce the lesion experimentally is considerable. Necrosis with hemorrhage resembling that which affects the pancreas does not occur in other organs as the result of similar irritation. The gland secretes ferments which are capable of digesting its own substance, but for reasons which as yet are not entirely clear the living cells of the gland are protected from self-digestion. When, however, the tissue is injured by the presence of bile or other irritant substance the pancreatic ferments doubtless cause further destruction. Physiological observations from the school of Pawlow, already cited, have a bearing upon the present subject; in the presence of bile the activity of the pancreatic ferments is increased. That the activity of the fat-splitting ferment is especially augmented may explain the wide dissemination of fat necrosis in association with acute hemorrhagic pancreatitis.

The clinical aspect of the facts just described is the following: (1) The presence of jaundice, or the history of previous attacks of gall-stone colic may give confirmation to the diagnosis of acute hemorrhagic pancreatitis when somewhat indefinite symptoms suggest the presence of this condition. (2) When at operation undertaken for the relief of obscure abdominal symptoms, disseminated fat necrosis indicates the presence of acute hemorrhagic pancreatitis, examination of the gall-bladder and bile passages will in a considerable proportion of cases reveal the presence of gall-stones. Their removal offers the best chance of recovery.

In a woman, forty-one years of age, recently under the care of Dr. Howard A. Kelly, disseminated fat necrosis noted at operation suggested the presence of acute pancreatic disease, and the well-marked enlargement of the pancreas confirmed the diagnosis. The gall-bladder contained a large number of small gall-stones. Cholecystotomy with removal of the calculi was followed by recovery.

It is noteworthy that in this case and in another in which acute pancreatitis was associated with cholelithiasis, recognized, however, only at autopsy, the patient passed clay-colored stools.

The occurrence of acute hemorrhagic pancreatitis in association with cholelithiasis adds another to the grave complications of the latter disease. Compared with cholelithiasis, however, acute hemorrhagic pancreatitis is a very rare disease. Since the lodgment of a calculus in the diverticulum of Vater may cause this lesion of the pancreas, it is pertinent to inquire why it does more frequently follow the expulsion of gall-stones from the common bile duct into the duodenum. Certain conditions must be fulfilled in order that a calculus can convert the bile and pancreatic ducts into a continuous closed channel. On the one hand the calculus must be of such small size that it is capable of occluding the duodenal orifice of the diverticulum without obstructing the two ducts that enter it. In all of the cases of acute pancreatitis which I have examined the gall-stones present in the bile passages and in the gall-bladder have been of very small size. On the other hand the anatomical conformation of the diverticulum of Vater in a considerable proportion of all individuals is such that the mechanism described could not result even were a gall-stone of suitable size lodged at the common duodenal orifice of the two ducts. In one of ten

individuals the pancreatic and bile ducts have no common channel, but open side by side at the summit of the bile papilla. Indeed, in only 32 of one hundred specimens which I have examined, was the diverticulum so formed that it could obstruct the passage of a calculus which would not completely fill it. In only three of about ten individuals, therefore, are the anatomical conditions such that a small calculus might divert bile into the pancreatic duct.

What has been said in regard to acute hemorrhagic pancreatitis applies with some modification to the condition known as gangrenous pancreatitis, which is a secondary stage of the hemorrhagic lesion. Gangrenous pancreatitis is usually associated with suppuration limited to the lesser peritoneal cavity, and its treatment is that of localized peritoneal abscess.

Another lesion which has its origin in the secreting apparatus of the pancreas is the chronic inflammation which follows obstruction or ascending infection of the pancreatic ducts. When the pancreatic ducts of an animal are ligated, chronic inflammation rapidly ensues and bands of thickened connective tissue are formed between the lobules which make up the organ. The human pancreas is provided with two ducts which in most instances anastomose within the gland, but in the great majority of cases the lesser duct which has its orifice nearer the stomach is so narrow that it is incapable of acting as an outlet for the entire pancreatic secretion. In man, as in lower animals, occlusion of the ducts is followed by chronic inflammation characterized by the formation of thick interlobular bands of fibrous tissue. Extensive destruction of the secreting acini results, but there is a well-marked tendency to spare the peculiar islands of Langerhans already mentioned. These are implicated only when the lesion is far advanced.

Occlusion of the larger pancreatic duct is most frequently caused by calculi formed within the pancreas, by biliary calculi or by carcinoma compressing the duct. It is in such cases, especially, that the digestive disturbances usually attributed to pancreatic disease have been observed. Prof. Fitz has collected from the literature 29 cases of pancreatic disease in which fatty stools were noted during life. In 14 cases cancer was present, in seven, calculi, and in two additional instances the pancreatic duct was obstructed. The small number of these cases indicates how infrequently fatty stools serve to aid the diagnosis of pancreatic disease.

Particularly noteworthy is the fact that obstruction of the pancreatic duct and consequent chronic inflammation of the interlobular type may be caused by a biliary calculus which has lodged in the common bile duct near its duodenal orifice. A small gall-stone impacted at the orifice of the diverticulum of Vater might cause acute hemorrhagic pancreatitis by diverting bile into the pancreatic duct in the manner already described, but a larger stone would completely fill the common part of the two ducts and cause obstruction both of the bile duct and of the pancreatic duct. Chronic inflammation of the gland would result, particularly since the bile passages in such cases are not infrequently the seat of infection and perhaps of suppurative inflammation.

Both Riedel and Mayo-Robson have emphasized the surgical importance of recognizing chronic interstitial pancreatitis in association with gall-stones. Both have pointed out that in a certain number of operations undertaken for relief from gall-stones the head of the pancreas is found to be so indurated that the existence of carcinoma is suspected. Indeed, in several instances a grave prognosis has been based upon the discovery of this induration, but the subsequent recovery of the patient has disproven the diagnosis of malignant disease. Mayo-Robson, who has described several cases in which chronic interstitial pancreatitis accompanied cholelithiasis, attaches considerable clinical importance to the former condition, believing that it causes severe pain in the epigastrium and in the midscapular region, vomiting at times, loss of weight and strength, and even death with increasing weakness. Cholecystotomy with drainage of the gall-bladder, and, when necessary, removal of the gall-stones has been followed by recovery.

In three cases seen at autopsy I have found chronic interstitial pancreatitis in association with cholelithiasis. In one case a large gall-stone was lodged near the duodenal end of the common bile duct, in such position that it compressed the pancreatic duct as it entered the diverticulum of Vater. In the other two cases, though at autopsy no calculi were found in the common bile duct, it is not improbable that chronic pancreatitis may have resulted from their former lodgment in this position.

The lesions previously described have had their origin in the secreting apparatus of the pancreas. When they cause complete destruction of the organ they necessarily inhibit all its functions. Another group of lesions, however, inhibits primarily that influence which the organ exerts on metabolism through the medium of the circulation, that is, the so-called internal function.

Clinical observation, inaugurated by Thomas Cawley as early as 1788, has shown that diabetes mellitus is frequently associated with grave disease of the pancreas, but the relationship of the pancreas to carbohydrate metabolism has not been clearly recognized until von Mering and Minkowski succeeded in completely extirpating the organ in dogs. Their experiments, which mark an epoch in the knowledge of diabetes, demonstrate as is well known, that sugar appears in the urine within a few hours after the complete removal of the gland. Glycosuria continues, the animal develops symptoms which are analogous to those of human diabetes, and death results after several weeks. Such experiments prove that in the absence of the pancreas the tissues of the body are no longer able to assimilate sugar; it accumulates in the blood and is excreted by the kidneys.

The relationship of the pancreas to carbohydrate metabolism can be shown in other ways. Particularly noteworthy are the recent observations of Dr. Herter who has found that adrenalin chloride painted upon the pancreas of dogs causes temporary glycosuria lasting several hours. When oxidized this substance no longer has the same action. By subsequent observations he has shown that a considerable number of diverse substances, which in general may be grouped together as reducing agents applied to the surface of the pancreas, cause glycosuria.

The pancreas is essential to normal carbohydrate metabolism, but how it acts has long been obscure. It has been maintained that the organ furnishes to the blood some substance, a hypothetical internal secretion, which is capable of decomposing sugar. The French chemist, Lepine, has claimed that the blood of normal animals contains a glycolytic ferment which is absent in animals deprived of the pancreas, but these observations have not been confirmed. Investigations of Otto Cohnheim appear to have supplied evidence that the pancreas furnishes to the blood a ferment which controls the metabolism of sugar. Cohnheim directs attention to the well-known fact that sugar in large quantity is broken up in the muscles, presumably by the action of some ferment; yet it is not possible to obtain from the muscles a ferment which has a noteworthy glycolytic action. By the use of special apparatus muscle is frozen, very finely divided, and subjected to a pressure of three hundred atmospheres. The fluid which is expressed does not cause the decomposition of grape-sugar, but if it is mixed with fresh pancreatic tissue similarly treated, the expressed juices thus obtained have the power to break up grape-sugar so that it is no longer recognizable by its reducing action. This glycolytic action is accomplished by neither organ acting singly, but by the two in combination. The change is doubtless referable to two ferments which bear to one another a relation similar to that which the enterokinase of Pawlow, already mentioned, holds to the trypsinogen of the pancreatic juice, the first being capable of bringing the second into action. Hence it appears that the pancreas furnishes to the blood a ferment which acting upon the muscle makes it capable of assimilating grape-sugar.

In animals complete extirpation of the pancreas is followed by diabetes, partial extirpation of the gland is followed by diabetes only when the part remaining represents a very small fraction of the whole organ. Destructive lesions of the pancreas are accompanied by diabetes when almost the whole organ is implicated, but when a considerable part is unaffected glycosuria is absent. Hence it results that acute hemorrhagic pancreatitis is seldom accompanied by glycosuria. In only two of 41 cases of hemorrhagic pancreatitis and in but three of 40 cases of gangrenous pancreatitis collected by Körte was sugar present in the urine. The necrosis characteristic of both the hemorrhagic and gangrenous lesion rarely if ever causes complete destruction of the gland, and in most instances leaves uninjured a part sufficient to carry on the internal function of the organ. Carcinomatous new growth invading the gland and replacing the parenchyma may so completely destroy the organ that diabetes results. It is evident, therefore, that diabetes mellitus, or at least glycosuria, may be regarded as a symptom of pancreatic disease.

Of the pancreatic lesions which have been found associated with diabetes doubtless the most common is chronic inflammation causing an increase of the interstitial tissue of the gland. Chronic interstitial pancreatitis is, however, more common than diabetes and is in the larger number of cases unaccompanied by the disease. Reference has already been made to the chronic inflammation which follows obstruction to the outflow of the pancreatic juice. The lesion which results is probably due in part at least, to infection of the stagnant secretion with bacteria from the duodenum, and a similar lesion may occur in consequence of ascending infection of the duct without occlusion. When chronic pancreatitis has its origin in the pancreatic ducts, newly formed tissue makes its appearance as course bands separating lobules and groups of lobules, the secreting parenchyma undergoing a variable degree of destruction. The ductless structures known as islands of Langerhans, on the contrary, are almost wholly unaffected, and often persist, though the parenchyma which previously surrounded them has been completely destroyed and replaced by dense fibrous tissue. This type of chronic pancreatitis, which may be designated interlobular, has been described in order that it may be distinguished from a second less frequent type characterized by the presence of fine strands of newly formed fibrous tissue within the lobules and between the secreting acini. While with the interlobular type of inflammation the islands of Langerhans are spared, with this second type which may be designated interacinar, since the new tissue penetrates between the secreting acini, the islands of Langerhans are invaded and their cells destroyed.

It has been necessary to discuss the histological details just cited in order to define that form of pancreatitis which is associated with diabetes mellitus. Interlobular pancreatitis, which spares the islands of Langerhans, is accompanied by diabetes mellitus only when it is so far advanced that the islands of Langerhans are finally altered, in common with the greater part of the secreting parenchyma. In a previous report I have described 21 cases of interlobular pancreatitis, in only one of which was diabetes present. In this case diabetes mellitus on the one hand was of mild type and glycosuria had disappeared when the patient was given a diet poor in carbohydrates, while on the other hand interlobular pancreatitis was so far advanced that the islands of Langerhans were surrounded and compressed by dense fibrous tissue. In six additional cases which I have re-

cently observed, interlobular pancreatitis has been unaccompanied by diabetes.

Interacinar pancreatitis, on the contrary, invades the islands of Langerhans and is accompanied by diabetes mellitus unless the lesion is of only very slight severity. In seven of nine cases which I have previously reported diabetes mellitus has been present.

Convincing evidence that the islands of Langerhans exert that influence upon carbohydrate metabolism, which heretofore has been attributed to the pancreas as a whole is furnished by a series of six cases in which the islands of Langerhans have been the seat of a peculiar hyaline change, wholly or partly destroying their cells. In all of these cases diabetes mellitus of variable severity had been present. In four instances interacinar pancreatitis was associated with the lesion, but in two cases the secreting parenchyma exhibited no noteworthy change, while the islands of Langerhans were in large part destroyed. The lesion has served the purpose of an accurately performed experiment selecting and destroying these structures which are embedded here and there in the parenchyma and in consequence of this lesion has occurred the same disturbance of carbohydrate metabolism which follows extirpation of the entire pancreas in the lower animals.

I have limited myself to a consideration of the cases which have come under my own observation. The conclusions, however, have been recently confirmed by a considerable number of observers who have studied changes in the pancreas associated with diabetes mellitus. Cases of diabetes accompanied by well-marked lesions of the ductless islands of Langerhans have been described by Wright and Joslin, Herzog and Steel, Gentis, Ssobolew, Weichselbaum and Stengl, Schmidt, Curtis, and Finney.

It must be borne in mind, however, that diabetes mellitus may occur without any demonstrable change in the pancreas. In a fairly large proportion of cases, constituting at least a third, the organ is found by gross and microscopical examination to be normal. Indeed, this fact is not surprising when we recall the complexity of sugar metabolism and the variety of factors which influence it. Experimental observations have demonstrated that temporary glycosuria may be produced by various injuries inflicted upon the central nervous system, notably by Claude Bernard's puncture of the floor of the fourth ventricle. Temporary glycosuria, it is well known, may be caused by the administration of the glucoside phloridzin which apparently so acts on the kidneys that they excrete part of the sugar that is normally present in the blood. Such facts do not explain the occurrence of human diabetes without lesion of the pancreas, but serve, nevertheless, to indicate that changes other than those which affect the organ may cause a disturbance of carbohydrate metabolism.

Of great significance are the observations of Cohnheim to which reference has already been made; outside the body disintegration of sugar cannot be brought about by the action of pancreatic substance, but when the expressed juice of pancreatic tissue is combined with that derived from muscle, the two in combination can cause glycolysis. If these results be accepted, it is not hard to believe that the disturbance of carbohydrate assimilation which is associated with diabetes may result from conditions which affect the muscular system even though the pancreas remain normal.

The relation of diabetes mellitus to lesions of the pancreas explains, I believe, the frequent association of diabetes with certain other diseases. It has long been known that cirrhosis of the liver is not uncommonly accompanied by diabetes mellitus so that diabetes with cirrhosis has been described as a special type of the disease. Among 280 cases of diabetes observed by Naunyn 29 were with cirrhosis of the liver, a proportion of one in ten. A considerable number of observers have noted the coexistence of cirrhosis and chronic interstitial pancreatitis, and in some of these cases diabetes mellitus has been present during life. Doubtless these lesions of the two organs may be dependent upon the same etiological factor and in several instances the individuals affected have given a history of excessive use of alcohol. Two cases of diabetes with cirrhosis of the atrophic type of Laennec have clearly defined for me the relationship of these two lesions, for in both instances chronic interstitial pancreatitis was present and was of the interacinar type, the islands of Langerhans being implicated in the sclerotic process. Through the kindness of Dr. Libman of this city I have had the opportunity of examining the pancreas from a third case of diabetes with cirrhosis and here too the organ has been found to be the seat of interacinar inflammation.

The remarkable condition known as bronzed diabetes offers an excellent illustration of the coexistence of cirrhosis and chronic pancreatitis in association with diabetes mellitus. The deposition of an iron containing pigment in the liver, pancreas and other glands is accompanied by chronic interstitial inflammation of these organs, and is associated with bronzing of the skin, and in the later stages of the diseases, with diabetes mellitus which is in such cases the usual cause of death. This rare condition has been designated bronzed diabetes particularly by French writers who have described the greater number of reported cases. I have studied and described an example of this condition of pigmentary degeneration; the pancreas was the seat of the interacinar type of pancreatitis. The lesion was, however, little advanced, and the patient who died with typhoid fever, had not apparently suffered with diabetes. Beattie has recently reported a case of bronzed diabetes in which the pancreas was the seat of chronic inflammation implicating the islands of Langerhans.

The following conclusion based upon the facts

just cited is, I believe, justified: When diabetes mellitus is found in an individual suffering with cirrhosis of the liver, the former disease is dependent upon the coexistence of chronic interacinar pancreatitis, doubtless produced by the same etiological factor, in some cases alcoholic excesses, which is responsible for the hepatic disease. In these cases at least it is possible to make a diagnosis of pancreatic diabetes.

In another group of cases, not inconsiderable in number, diabetes is associated with advanced arterial sclerosis. The frequent coexistence of the two conditions is not surprising since both occur more frequently with advanced age and in many cases, particularly where arterial disease is slight, their coexistence is probably accidental. Cases of chronic interstitial pancreatitis with arterial sclerosis have been described by several writers and in three of nineteen cases of diabetes, which I have described, degenerative changes were recognizable in the small arteries of the pancreas. In one case in which death occurred with gangrene of the leg, due in part at least to calcification and occlusion of arteries, the pancreas was the seat of chronic interacinar inflammation causing changes in the islands of Langerhans. I have recently seen at autopsy a similar case in which the arteries of the gland exhibited well-marked obliterative endarteritis. The occurrence of chronic pancreatitis in association with advanced general arterial sclerosis has this significance: When during life diabetes accompanies advanced arterial disease, it may with much probability be referred to chronic interacinar pancreatitis.

Lancereaux, more than twenty-five years ago, attempted to define clinically two types of diabetes: diabetes with emaciation due to disease of the pancreas and diabetes with obesity unaccompanied by lesion of the organ. Few clinicians have accepted the criteria proposed by Lancereaux and the existence of pancreatic disease is rarely established unless an autopsy is performed. In a few cases diabetes is associated with some lesion which causes such advanced destruction of the secreting elements of the gland that digestion suffers and fat or undigested proteids are readily recognizable in the feces. In these cases pancreatic disease is usually the result of longstanding occlusion of the pancreatic duct, causing injury to all elements of the organ, or to carcinoma invading and destroying it. In other cases, as I have just pointed out, associated cirrhosis of the liver or advanced general arterial sclerosis may give indication that the pancreas is at fault. In a large proportion of cases, however, it will be impossible with our present knowledge to decide during life if diabetes is referable to a lesion of the pancreas.

Even if in every case of diabetes mellitus it were possible to accurately determine the relation of the disease to the pancreas, the application of this knowledge to the treatment of the case would not at present be clear. For a few diseases a specific method of treatment has been deduced from a knowledge of etiology and pathogenesis. As an example of this logical sequence may be cited myxedema, a disease in some respects analogous to diabetes mellitus. When it had been established that the disease was due to impaired activity of the thyroid gland, a remedy was found in the thyroid tissue or its extracts obtained from lower animals, since the necessary internal secretion of the gland can be replaced by thyroid extracts administered by mouth or injected into the subcutaneous tissue.

Since the pancreas furnishes to the blood a so-called internal secretion, perhaps a ferment, necessary to normal carbohydrate metabolism, and since diabetes mellitus results when the pancreas is no longer capable of supplying this need, the possibility of artificially replacing the defect has suggested itself. A number of observers, among them Minkowski, found that fresh pancreas or extracts derived from it administered to dogs deprived of their pancreas failed to prevent glycosuria or to diminish its severity when established. No greater success has followed the administration of pancreatic tissue or its extracts to patients suffering with diabetes mellitus, and a considerable number of careful observers have failed to discover any noteworthy effect upon the amount of sugar excreted by diabetics subjected to such treatment. There is, however, some clinical and experimental evidence to show that when diabetes is the result of a destructive lesion which inhibits the digestive function of the pancreas, some benefit may be obtained by supplying to the intestine pancreatic ferments. A remarkable case described years ago by Fles has been frequently quoted. Diabetes mellitus was accompanied by disturbed digestion, abundant fat and undigested muscle fibers being recognizable in the feces. A watery extract made from the entire pancreas of a calf was daily divided into three parts and one part was administered after each meal. Though the patient continued upon a diet of bacon and fat meats, fat disappeared from the feces at the end of two days, but glycosuria persisted unchanged. Whenever the administration of the extract was discontinued, fat and undigested muscle fibers reappeared in the feces. The general condition of the patient was improved for a time, but death finally occurred as a result of phthisis. Autopsy showed that the pancreas was the seat of very advanced sclerosis. In a somewhat similar case Oser administered pancreatin with good result.

Recent observations of Cohnheim upon the glycolytic power of pancreas and muscle in combination suggest new possibilities concerning the nature of diabetes mellitus and may finally explain the failure to supply with pancreatic extracts deficiency of the internal function of the pancreas. Few diseases have been the subject of more careful experimental and clinical study and we are in possession of many important facts concerning the pathology and chemistry of diabetes mellitus. Still more accurate knowledge will doubtless find far reaching application.

THE PROPHYLAXIS AND MEDICAL TREATMENT OF DISEASES OF THE PANCREAS.[1]

BY GLENTWORTH R. BUTLER, M.D.,
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The subjects assigned for this paper are the prophylaxis and the medical treatment of diseases of the pancreas. These topics are at first glance of an alluring interest. But the results of investigation and sober second thought are distinctly suggestive of certain chapters of a work which was written many years ago by a simple-minded and ingenuous student of nature. This book was entitled "The Natural History of Iceland." The seventy-second chapter consists of one sentence, which reads thus: "There are no snakes to be met with throughout the whole island." The forty-second chapter is even more direct, succinct, and informing. It says, "There are no owls of any kind in the whole island."

Prophylaxis.—The attempted prevention of diseases of the pancreas lies in an appreciation of their causes. Among the etiological factors assigned are syphilis, tuberculosis, arteriosclerosis, alcoholism, cardiac, pulmonary, and renal disease, acute and chronic infections, obesity, diabetes (not of pancreatic origin), neoplasms in close proximity to the pancreas, catarrhal and bacterial diseases of the intestine, and affections of the liver and gall-bladder (especially cholelithiasis). If therefore one or more of the conditions just rehearsed are capable of successful treatment, as may be the case, *e.g.*, syphilis, or surgical removal of gall-stones, by so much is the liability to pancreatic disease lessened or terminated. Beyond this we cannot, at present, go.

Medical Treatment.—Pancreatic disease is probably by no means of such infrequent occurrence as we commonly suppose. Nevertheless, owing to the great difficulties of diagnosis, its existence is rarely recognized *intra vitam*. The great majority of cases of disease of the pancreas recover or die without a correct and certain determination of their nature having been made. Naturally, therefore, medical treatment addressed directly to the diseased organ, even were it possible, is seldom practised. This paper does not, of course, deal with the question of surgical interference, which has afforded some brilliant successes.

Various remedies have been used with reported good results, but the correctness of the diagnosis in each case is open to doubt. Thus in chronic pancreatitis iron, nitro-muriatic acid, chlorine, calomel, and corrosive sublimate have been put forth as efficacious remedies. Much work has been done in the line of organic therapeutics, especially in cases of supposed pancreatic diabetes, by the administration in various ways, of the pancreas and its preparations. Some of these methods are the giving by the mouth of pancreatin, or the expressed juice, or the extract of the finely ground fresh pancreas of the calf or sheep, made with water, physiological salt solution, or glycerin, or the eating of the raw minced or slightly broiled pancreas, or taking it in capsules, or spread upon bread. The juice of the gland, and the minced gland macerated in an alkaline salt solution, have been given by enema. The expressed juice and the glycerin extract have been administered subcutaneously. The immediate implantation of the pancreas from a just killed sheep has also been undertaken, the patient dying in coma.

The practical results of pancreas-therapy have been disappointing in that disease of the organ has not been modified. On the other hand, when the disease is one which causes a lack of pancreatic juice, the use of efficient pancreatic preparations has in some cases measurably improved the digestion of fats and proteids. The internal use of ox-gall has also distinctly assisted the assimilation of fats.

In the present state of therapeutics the medical treatment of pancreatic disease is confined to the relief of symptoms, *e.g.*, pain, or jaundice, by the usual methods; and the maintenance of the strength of the patient by rest, careful feeding, and other commonly employed means, in order that he may survive the course of the disease or be better able to cope with the strain of an operation. When the presence of pancreatic calculi has been correctly diagnosed the injection of pilocarpine, which has been proved to increase the pancreatic secretion, should be practised, one successful case having been reported from Eichhorst's clinic. We may, however, look forward hopefully to the results of such work as has been done by those who have preceded, or will follow, me to-night, for these brief remarks form simply a bare condensation of the labors of many patient and splendid workers in a most interesting field.

[1] Read before the Medical Association of the Greater City of New York, February 8, 1904.

THE CLASSIFICATION AND SYMPTOMATOLOGY OF DISEASES OF THE PANCREAS.[1]

BY CHARLES G. STOCKTON, M.D.,
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The classification of diseases, always difficult and usually unsatisfactory, is especially so as relates to the pancreas. This in part is because our knowledge of the pathology is incomplete and in part because the pancreas secretes certain enzymes or other active principles which, in the presence of disease, lead to peculiar and remarkable changes both in function and in structure, so that it is difficult to apply the stereotyped terms of classification.

Tumors of the pancreas occur as carcinomata of various forms, especially the dense, hard growths,—adenomata, tuberculosis, syphilis and cysts,—the last being divided into at least three varieties: retention cysts, proliferation cysts and hemorrhagic cysts. Much could be written on the symptomatology of these affections, but it must be passed at this time.

[1] Read at a symposium before the Medical Association of Greater New York, Feb. 8, 1904.

The so-called inflammatory diseases of the pancreas at once involve us in difficulty. Chronic pancreatitis is usually described as indurative, although fatty degeneration and ingrowth of adipose tissue often form a considerable part of the mass. Under the heading of chronic indurative pancreatitis we have to do with the degenerative processes, in some instances beginning with the blood vessels, in others with the duct of the gland, and in still others as the result of inflammatory processes reaching the pancreas from without. It may be a diffuse process involving the entire organ, or it may be confined to certain regions only. We have come to accept two forms of distribution of the fibroid degeneration, one the ordinary interlobular type, the other characterized by diffuse proliferation of the interacinar tissues which invades the islands of Langerhans and apparently constitutes the structural change upon which pancreatic diabetes depends. Especially in the interlobular pancreatitis there is marked hyperplasia of connective tissue, and the organ is sufficiently hard to make the term indurative quite appropriate, and when so is not infrequently mistaken for malignant growth. When the induration involves the head of the pancreas, it may, from pressure, obstruct the common bile duct and give rise to phenomena that suggest malignant growth, or cholelithiasis. If the choledochus escapes there may still ensue symptoms of more or less importance, depending upon interruption of the pancreatic function. If the disease invades the islands of Langerhans, we may encounter a persistent diabetes; but if these regions are spared in part or whole, nothing more than a transient glycosuria would be expected. The other symptoms are those of intestinal indigestion and, occasionally, fatty stools, lipuria, sialorrhea, emaciation, and in some instances severe anemia. Robson considers the diagnosis difficult, but this is not always so, as has been proven by operation and by autopsy. Given a palpable induration in the region of the pancreas, with disturbance in intestinal digestion, with, at times, traces of sugar and albumin in the urine, with or without increased salivation, fatty stools or lipuria and depreciation in general health without the cachexia of cancer, then one may make a provisional diagnosis of chronic indurative pancreatitis.

Robson and Moynihan dispose of the question of the classification of inflammatory diseases of the pancreas by dividing them into the acute, subacute and chronic forms. Fitz describes pancreatic hemorrhage, acute hemorrhagic pancreatitis, gangrenous pancreatitis and suppurative pancreatitis as well as the chronic forms. Oser speaks of acute hemorrhagic pancreatitis, suppurative pancreatitis, besides the chronic forms before alluded to. It does not seem to be satisfactory to attempt the explanation of acute pancreatic processes along the line of ordinary inflammation. It is true that the pancreas may become invaded by bacteria and, as a result, acute inflammatory processes develop, with hemorrhage, with necrosis, to which some apply the term gangrenous, usually accompanied by the fat necrosis of Balser. But while it is true that this results from ordinary inflammation of the pancreas consequent upon infection, we frequently find the same processes at work with entire absence of infection, the diseased tissues proving sterile to carefully conducted culture methods. In some instances an inflammatory reaction is evident, in others it is entirely lacking. What is present in all cases is the escape of pancreatic secretion into the tissue, the consequent necrosis of the pancreas and surrounding parts, accompanied by hemorrhage, liquefaction necrosis, and fat necrosis. While it is admitted that these phenomena may be excited by an inflammation of the organ, we must not lose sight of the fact that there are cases free from infection, and inflammation, as we are in the habit of using that term. It would seem to me just as correct to speak of peptic ulcer of the stomach as a localized inflammation as to apply that term to those cases of necrosis of the pancreas under discussion. In short, it would seem that the term necrosis should be used insted of inflammation in describing certain instances of acute disease of the pancreas. One of the most significant facts is the presence of hemorrhage in these cases: it seems to be a very early as it is an important step of the morbid process. Just why the hemorrhage occurs is not so easily explained. Of course, some pathologic agency must induce the hemorrhage, but to hold that this is inflammation in all cases would appear to be pure assumption. The difficulty is increased by the fact that the non-infected cases and some of the infected ones may follow a course apparently identical. Some infections of the pancreas lead to pus formation, what is called suppurative pancreatitis, or abscess of the pancreas. Such a case follows a different course from that of the so-called hemorrhagic pancreatitis. In the latter, even with extensive destruction of the tissues of the pancreas as well as of the surrounding structures, so that there may occur the sequestration of the pancreas and the accumulation of a liter or more of liquefied tissue, no pus whatever is found. This remarkable state of affairs is quite unlike what happens in inflammation and is unparalleled in pathology.

The symptomatology of acute hemorrhagic pancreatitis and that of hemorrhage into the pancreas are very closely related. Indeed, as has been said, hemorrhage may be the first recognized step in the necrotic process. In the onset there is intense pain in the lower part of the epigastrium, manifestations of shock, generally nausea and vomiting. These symptoms may subside after a few hours, or continue for a few days, and then subside. Not infrequently the pain diminishes, but the prostration continues, vomiting recurs, cyanosis appears, the temperature is raised from one to three degrees, and the pulse becomes more frequent, small, feeble and compressible. The abdomen is slightly distended, and there is in-

creased resistance in the upper half of the abdomen, where the tenderness is usually considerable, sometimes very marked. The general appearance of the patient suggests a grave abdominal trouble which is more striking in some cases than in others. The bowels are usually somewhat sluggish, but lack the motor paresis of peritonitis. The symptoms are increased by movements of the body, and yet there is not the disinclination to change position which is seen in those suffering from peritonitis. Sometimes the vomiting is so persistent that obstruction of the bowels is suspected; at other times the tenderness and pain in the upper part of the abdomen is so marked that one becomes suspicious of perforation of the stomach, gall-bladder or intestine. In a few instances slight transient glycosuria appears and traces of albumin in the urine are to be expected. Patients may continue in this condition for several days, or even weeks. I have known recovery from an attack to take place, the patient succumbing to a second seizure, as verified post mortem. More often the process continues for a few days without marked change, when somewhat suddenly the prostation increases, the pulse becomes "running" and almost imperceptible, and death results apparently from abdominal shock. Sometimes the patient sinks into a stupor during the last twenty-four hours, in other cases intelligence continues until the end. I have seen cases that were mistaken for intestinal obstruction, perforation of the gall-bladder and appendicitis, and yet it would seem that those who have carefully studied one typical case there would be little danger of misunderstanding the nature of the disease on a second occasion.

Now, as to suppurative pancreatitis or pancreatic abscess, it must be understood that there is considerable variation of the symptoms in different cases. Where the suppuration is associated with hemorrhagic pancreatitis we must expect to find the symptoms of the latter to which are added those of septicemia. On the other hand, there are instances in which the manifestations are merely those of suppuration in the upper part of the abdomen, and the element of shock may be less marked than in the hemorrhagic form of the disease. For some reason the pancreas appears to tolerate better the presence of pus than it does the escape of pancreatic secretion into its tissues. It is hard to explain why the presence in the pancreas of certain infections or the entrance therein of bile (according to Opie), or a slight hemorrhage into its substance is capable of producing a rapid, extensive and fatal necrosis of the organ and surrounding parts, and yet that suppuration may continue for a considerable period, in some instances, without producing the phenomena of acute hemorrhagic pancreatitis; nevertheless, there exist abundant data to show that such is the case. It is therefore proper in classification to put down suppurative pancreatitis as a process separate and distinct from that of so-called acute hemorrhagic pancreatitis or necrosis.

In making this statement one should repeat this reservation, namely, that in a proportion of cases we find both purulent and hemorrhagic pancreatitis in the same case, excited apparently from the same cause and producing a group of symptoms that include those which relate to hemorrhage, necrosis and suppuration. Leucocytosis is to be expected in suppurative cases, but is inconspicuous or absent in those of other types. That singular phenomenon, the fat necrosis of Balser, occurs in most, but not all acute processes of the pancreas, whether suppurative, necrotic or inflammatory. Its precise relation to pancreatic diseases is not yet satisfactorily explained in spite of much excellent experimental work done on the subject. In fact there remains to be elucidated a number of important and intensely interesting questions in diseases of this organ.

RENAL DECAPSULATION FROM THE PATHOLOGIST'S POINT OF VIEW.[1]

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The operation of renal decapsulation for the palliative or curative treatment of chronic nephritis involves three fundamental propositions for consideration: (1) The nature of the renal circulation; (2) The modus operandi of the restitutio ad integrum in highly differentiated organs; (3) The etiology and pathology of the disease.

In order to establish the validity of such a procedure, it is necessary to show that stripping of the capsula propria, and adhesion of the capsula adiposa are competent to reinforce the cortical circulation, and, assuming this to be possible, that the new blood supply, in operation with the laws of regeneration will arrest degenerative changes in the cortex, and restore those areas in it, which have been destroyed during the progress of the disease. Furthermore, it must be demonstrated that those causes which are responsible for the disease will cease to affect the kidneys after the operation has been successfully performed. Otherwise, if it stands proven that, by virtue of the morphology of the intrinsic renal circulation the collateral blood supply may not be drawn upon for its reinforcement, and if it be shown that regeneration sensu-strictiori does not obtain in the renal cortex; and if, again, it be true that chronic nephritis is a local expression of a general condition, it will follow as a corollary of these facts that this operation is not only futile, but must be regarded as harmful.

The Renal Circulation.—The renal artery divides at the hilum of the kidney as a rule, into four or five branches, the distribution of which, in relation to the pelvis, is such that three-fourths of the blood supply is carried anteriorily while one-fourth runs posteriorily. The arteries are

[1] Read at the Annual Meeting of the Medical Society of the State of New York, Albany, Jan., 1904.

strictly end-arteries, and branches do not cross from either side to the other. Three branches enter the cortex of the kidney after supplying the tissues of the hilus, passing over and under the renal vein into Bertini's columns. From here they cross with repeated branchings to the boundary between the cortex and medulla, so that from usually two large arteries originate in the circumference of each pyramid fine arterial ramifications whose branches have no communication with each other. These are the arterial arcades. From the arterial arcades pass smaller arteries, usually at right angles with the arcades, into the cortex where, after dividing one or more times, they split into fine branches that course in perpendicular direction between the cortical fascicles, or lobules, toward the periphery of the cortex. These are the interlobular arteries, and are wholly concerned in supplying the Malpighian tufts, excepting a certain number which go to the medulla,—the arteriolæ rectæ veræ, and to the capsule,—rami capsulares. Each interlobular artery gives off in its entire length, from two, three or four sides, a large number of fine branchlets having arterial structure, and measuring 18—45μ in diameter, which either immediately, or after a single division penetrate the capsule of Bowman. These are the vasa afferentia. From the vas afferens, immediately after its entry into Bowman's capsule are given of numerous capillaries which pursue a tortuous course within the capsule, *but do not communicate with each other.* This is the glomerulus, and the individual loops measure 7 to 9μ in diameter. They finally coalesce to form another single vessel which emerges from the capsule of Bowman and is called the vas efferens. This vessel has the import, and partially the structure of an artery; and, after emerging from the capsule resolves into the renal capillary system, which is found in both the cortex and medulla. The vas efferens is 9—18μ in diameter, about half the size of the vas afferens. It forms two sets of capillaries (1) a rich network with an elongated mesh, whose capillaries range from 4.5—9—13μ in diameter, called the arterial capillaries. This plexus surrounds the medullary rays in the cortex, and is then confluent with (2) a network of wider capillaries with a roundish-cornered mesh 11—33μ that surrounds the convoluted tubules upon all sides, and is called the venous plexus. These vessels finally coalesce to form the venous roots. These relations are constant, excepting with those efferent vessels emerging from the Malpighian tufts found in the inner zone of the cortex, near the bases of the Malpighian pyramids. Here they are distinctly larger, 22—35μ, and stretch downward into the Malpighian pyramids, running parallel to the straight tubules, being designated as the arteriolæ rectæ spuriæ. They course with repeated divisions at acute angles to the papillæ, where they decreased in size to 9—22μ, and finally are distributed here and in the medulla, in the last location emptying either through their ends, or by small twigs into the capillaries of this region which measure 6—9μ and which from the long drawn nature of their meshwork, resemble the arterial capillaries with which they inosculate at the pyramidal bases, or around the medullary rays.

Quite in resemblance with the arteriolæ rectæ spuriæ which emanate from the vasa efferentia, are certain arterioles which spring either from the interlobular arteries, the arterial arcades, or from those vasa efferentia which lie close to the medulla in the cortex. These are the arteriolæ rectæ veræ already mentioned.

The renal vein commences in two places, *i.e.*, on the surface of the organ, and in the apices of the palillae. At the periphery of the cortex they originate from the capillary networks of the cortex as small venous roots, some of which regularly surround the single lobules, and form between these somewhat larger branches,—the venæ stellulæ verheynii; others, stretching out over several or many lobules assemble to make larger branches. Both varieties then progress downward into the cortex as venæ interlobulares, and course with the interlobular arteries between the lobules, being strengthened by receiving many other venous rootlets from the interior of the cortex, which are formed from the venous capillaries surrounding the convoluted tubules. They then pass at once, or through somewhat larger branches, at right angles into the larger veins, which latter are situated with the larger arteries in the neighborhood of the pyramids, are connected by anastomosis, and finally lead into large valveless veins, which emerge from the kidney in line with the arteries. Before entering the larger veins, they receive branches from the pyramidal veins,— venulæ rectæ — which originate from beautiful capillary networks surrounding the capillary ducts, and also in part from loops springing directly from the arteriolæ rectæ.

They become thicker as they ascend between the tubuli recti by receiving small branches; and, with the arteriolæ rectæ form large vascular bundles in the boundary layer of the pyramids. The veins of this bundle empty through a certain number of larger branches into the arched ramifications surrounding the pyramids. The venous plexuses in the surface of the papillæ are finally associated not only with the venulæ rectæ, but also with the veins of the renal calices, thus forming a sort of connecting link between the outer and inner veins.

Aside from the communication of arteries and veins by means of capillaries, it has been shown by E. Steinach[2] and others that, in the neighborhood of the vascular arcades and the renal capsule there is sometimes direct anastomosis by means of precapillary vessels, which have a diameter of 10—12μ and 20μ and are at times very short, at others quite long.

The vessels of the capsula propria originate in part from the renal artery before its entrance into the hilus, from the suprarenal, lumbar, and internal spermatic arteries, also the vessels of the ureter.

According to Koelliker,[1] certain of the arteriae interlobulares, after supplying the Malpighian tufts send branches into the capsule, which break up into a wide mesh of capillaries which communicate with the capsula adiposa.

The veins of the renal capsule are in communication with those of the surrounding organs, and in part with the portal system.

It is obvious from this description of the structure and distribution of the renal blood vessels, first, that the arteries are terminals, *i.e.,* that they have nowhere any direct communication with each other, the only possible communication being intermediate through the capillary systems; second, that all of the vessels vary systematically in diameter in definite locations,—a fact which must certainly have important bearing upon the nature of the blood pressure in the various divisions of the vessels, and the renal circulation as a whole; third, that, with the exception of a few interlobular arteries which penetrate the capsula propria, and a few capsular arteries which enter the cortex, the only communication between capsule and cortex is capillary.

It is further obvious, that obstruction to the renal artery in the main trunk, or any branch must result in arrest of blood supply in an area of the kidney corresponding to the distribution of the vessel obstructed; and that, assuming reestablishment of the circulation in this area through collateral vessels, the direction of the current must be reversed. Thus it will be seen that, under such conditions, the delicate parenchyma of the kidney is subjected to two grave insults, *i.e.,* first, loss of nutrition, second, alteration of pressure due to failure of the vis a tergo in the artery, and the reversal of current in vessels of widely varying diameter.

In this connection it is to be remarked, that the history of renal infarcation coincides exactly with what would be expected of such a circulation.

Since the classical researches of Virchow[3], Colnheim[4] and Litten,[5] upon thrombosis and embolism, and their effects upon tissues, it has become common knowledge that the regeneration of tissues in infarcted areas is per cicatrice. Whether the infarctions be hemorrhagic or oligemic, the final result is the same, *i.e.,* coagulation necrosis, organization of the necrosed area, cicatricial contraction of the organized tissue. Similar changes obtain in endarteritis obliterans, where terminal vessels are involved; and this condition is regularly present in arteriosclerotic nephritis, and the chronic diffuse indurative variety. In these kidneys the depressed cicatrices are resultant from stenosis of larger or smaller arteries, usually in the cortex, often in the medulla, which produce infarctions, corresponding in area to the district supplied by the vessel involved. Occasionally such an infarcted area receives a branch from the capsula artery, in which event, if the area be not too large, and the artery be of sufficient size, trophic conditions may be sustained for a time; but even here, in the majority of instances, there is a progressive tendency towards induration with final contraction of the area.

Over these depressed areas the capsule is often dense, and firmly adherent; so that when stripped off, considerable portions remain attached to the cicatrices, thus rendering them impenetrable to blood vessels.

Other structural changes are regularly found in those portions of the cortex which are not infarcted, such as tubular dilatation and retention cysts; so that any further loss of tissue through adhesion to the stripped capsule, which usually carries with it the extreme outer layer of the cortex, is to be regarded as highly injurious.

With these conditions at hand, can the restitutio ad integrum sensu strictiori occur in the renal cortex? Two things would be necessary to accomplish this (1) the collateral blood supply should be sufficient to restore the normal circulation, and, (2) that a highly differentiated organ such as the kidney could regenerate its component elements.

Litten's experiments show that the collateral circulation is not sufficient to restore the equilibrium; and the researches of Marchand,[6] and many others whom he quotes, prove that renal regeneration does not take place beyond a certain point. Litten conducted a series of experiments principally upon rabbits, whose kidneys closely resemble those of man, in which he ligated the renal artery alone, the renal vein, and both vessels together. He also describes in detail, and accurately, the renal circulation, including the collateral vessels. His description of the circulation coincides with that of Koelliker, quoted in this paper, and also of Brödel[7] in his valuable contribution on the subject in the *Johns Hopkins Bulletin,* 1901, in which he points out new facts of great importance to surgeons in operations on the kidney.

There is time for consideration only of some of the salient points in Litten's paper which bear upon the subject now under consideration. He found that when the parenchymatous elements in the convoluted tubules were deprived of their blood supply for a period lasting over two hours, they died, and did not regenerate. Talma[8] and Werra,[9] in later similar experiments, confirmed this observation, which is now generally accepted as a fact. It is important here because of its bearing upon decapsulation and renal regeneration. Litten also found that when either vein, artery, or both, were tied the kidney increased from one-third to three times its normal size, becoming more tense. On gross section two hyperemic zones were found,—one at the periphery of the cortex, the other in a narrow belt half in the cortex, half in the medulla. The cortical tissue between these two zones is paler.

He found that these congested zones were produced by the collateral vessels, which were sufficient in the capsule and hilum to carry the blood into the capillary plexuses, but not sufficient either in numbers or force of current to reestab-

lish the circulation, the result being that the capillaries in these zones were gradually dilated and gorged with blood, which, if the ligature remained long enough finally stagnated, with diapedesis of erythrocytes and parenchymatous degeneration. The vis a tergo being so slight the vessels become filled and cannot empty, so that stasis followed by hemorrhage, and coagulation necrosis result. This condition of the circulation also accounts for the increased size of the kidneys. Exactly the same phenomena obtain in renal infarction, the only difference being that they are restricted to the infarcted area.

Litten found that, when the artery, vein, and ureter were ligated and the capsule stripped, the kidney became neither congested nor enlarged, a matter of importance here, because it clearly shows that stripping of the capsule completely cuts off what little peripheral circulation is derived from the capsular arteries. The whole bearing of this will be apparent when the subject of regeneration is considered.

Summing up all the facts the conclusion is reached, that very little can be expected from the renal collateral circulation when the main supply of blood is compromised. As to renal regeneration, the elaborate researches of Marchand, Barth and others, prove that, where extensive destruction of the renal tissue occurs repair is imperfect and never to the degree of restoration of functional activity.

Perhaps the best description of the processes of repair in the kidney is that of A. Barth,[10] in the pathological institute at Marburg, quoted by Marchand in his elaborate work on the healing of wounds and transplantation of tissues. This investigator operated on guinea-pigs, rabbits and dogs. He resected large wedge-shaped pieces in the long axis of the kidneys and either coapted the cut surfaces with sutures, or left them slightly separated. Before examination of the kidneys they were injected with blue gelatin; and this was done at periods of from two to 102 days after the operation.

Quoting Marchand, he says: "The adhesion of the wound surfaces apposed by suture is accomplished as usual through a fine layer of fibrin. The deeper still separated wound-cavity is filled with coagulated blood, at the borders of which are gathered many leucocytes (two to twenty-four hours). In the same manner the capsular wound is closed with extravasation which also involves the parenchyma immediately surrounding the wound. Where the wound was not completely closed, the cavity thus formed was filled with blood, coagulated fibrin, and remains of necrotic parenchyma. The degenerative changes in the neighboring parenchyma begin with epithelial swelling, indistinctness of nuclei, filling of the lumina of the uriniferous tubules with a homogeneous mass, which progressively fuses with the dead epithelium. In the lumen of many tubules are gathered together with granular detritus, many leucocytes; others show fatty degeneration of the epithelial cells, while after two days mitosis appears in the better preserved cells. Necrosis of renal tissue in the neighborhood of the wound can spread to a considerable degree and assume distinctly the form of a wedge in consequence of severance of a larger ascending arterial branch. No changes are found in the remaining renal parenchyma. After four days, growth of connective tissue cells in the region of the wound is richer; they press into the coagulum filling the wound, and can be demonstrated in large numbers between the tubules of the borders of the wound as well as the capsule. The tubules in this district are in part filled with coagulum, but for the most part engaged in growth, and rich in mitoses, which latter are found in great numbers in the connective tissue—and endothelial cells. Later the mitosis grows progressively less. The actual process of healing is completed in from eight to eleven days; and is later followed by cicatricial contraction. In the cicatrix are found new-formed small tubules, which are in association with the straight and convoluted tubules of the neighborhood, but can have no functional significance. Occasionally the contraction stretches out over larger areas of the kidney, whose tubules contained in a deeper strata of the cortex show clearly widening and enlargement of the epithelial cells as well as of the glomeruli, *resembling the better preserved parts of a contracted kidney.* New formation of glomeruli was never observed."

"These investigations of Barth led him to the conclusion that regeneration of a functionally active renal parenchyma in the cicatrix does not occur, any more than restoration of a degenerated parenchyma by compensatory hypertrophy, or complete new formation as Tuffier,[11] or Kümmel[12] have claimed."

Ribbert[13] in the last edition of his general pathology adopts the same view of the nature of the process of renal regeneration.

Thus the second point is answered. It is clearly so, that the restitutio ad integrum never obtains in the kidney in the strict sense of the word, the repair always taking place in the usual way, *i.e.*, per cicatrice. So that, even assuming the possibility of renewing the renal circulation by substituting the capsula adiposa for the capsula propria, there is not the slightest warrant for assuming the occurrence of renal regeneration as a result.

Based upon pure reason, and the results of laboratory experiments, Dr. Edebohls' theory of the operation of renal decapsulation for either the cure or relief of chronic nephritis must fall—it cannot accomplish it.

As for the operation itself only certain immediate and remote results are conceivable. There is but one condition, in one variety of chronic nephritis which should logically be relieved by decapsulation, and that is the tension in a large white kidney. But even here any such relief is more than offset by the damage occasioned in the act of stripping the capsule.

The fact seems to have escaped notice, that

when the capsula propria is torn away the very vessels from which so much is expected in the renewal of the circulation are torn away also. They are forever and irrevocably gone; and it is a physical impossibility that the capsula adiposa should do anything in the way of vascular regeneration, excepting by the usual process of formation of capillary anastomosis; and as Brödel well remarks, the direction of the circulation in the capsula adiposa being away from the kidney but little could be expected from it, even if it were possible to regenerate or substitute arteries which should penetrate the cortex. Again it seems to be forgotten that, even assuming the most desirable results in renewal of the renal circulation by this operation, there must be inevitable death of considerable areas of the cortical parenchyma in its very important outer zone; for the reason that, as all authorities agree, the renal epithelia die in two hours after being deprived of their blood supply, and it requires at least four days for the production of new capillaries. Furthermore, in those kidneys where the capsule is adherent, stripping becomes really dangerous, because, as has already been remarked, in such kidneys what remains of the cortex is already compromised. The act of stripping not only damages these quasinormal areas by tearing off a portion of the outer zone, but, in the act of repair, with adhesion of the capsula adiposa to these denuded surfaces, new cicatrices are formed which in the end can only contract and increase the trouble. Finally it must be urged that this operation totally disregards the fundamental principles which are involved in chronic diffuse nephritis. Excepting in those cases where it is definitely shown that the renal disease is due to purely local causes, such as pressure, or obstruction of the circulation from stretching of the vessels, or other cause, this disease is merely a local expression of a general condition. It would be hard to find good authority for combating the view that chronic nephritis is caused either by some form of toxemia which is endogenous, or exogenous, and in the course of which toxemia the renal structures are irritated and finally degenerate, or by direct obstruction to the general circulation from cardiac disease.

Where a kidney has been dislocated, or pressed upon by some other structure, it is easy to see how good may be accomplished by anchoring the organ, or removing the obstruction; but it is inconceivable that any radical gain could come from increasing the flow of blood to the kidney whose very toxicity is assumed to be the cause of the structural changes in the organ. Much more must it be urged, that harm will result from an operation which establishes the locus minoris resistentiæ in a functionally very important tissue, and necessitates repair by a process which is in itself in the nature of a connective tissue hyperphasia, and which, under the toxemic influence must surely hasten the progress of the disease, rather than retard or cure it.

In conclusion it must be reiterated, that (1) on teleological grounds the renal circulation cannot be restored by decapsulation and substitution of the capsula adiposa. (2) No amount of restoration of renal circulation would restore the integrity of the cortex. (3) Chronic nephritis being a local expression of a general disease will yield only to such treatment as is calculated to cure the general disease; and here there can be hope only of arresting the progress of the renal degeneration. The diseased portions of the organ will never regenerate.

Last September a series of experiments was begun at the Hoagland Laboratory, under the auspices of the "Van Cott Fellowship" by myself and my colleague, Prof. Archibald Murray, the present Fellow, for the purpose of determining the effect of renal decapsulation upon normal kidneys, and also the relation of the renal collateral circulation to trophic conditions in the kidney. Cats were selected because of their high resistance to operative procedure. The operations were performed by myself, assisted by Drs. Murray and Fincke; and the work of preparing the kidneys for microscopic examination was conducted by Prof. Murray, whose faultless technic ensures accurate findings. Ether was the anesthetic employed. Under strict aseptic precautions the following operations were done:

1. The kidney was delivered through an incision in the back close to the vertebral column outside of the peritoneum. The capsule stripped, ablated, and the kidney returned through the incision which was then sutured.

2. The kidney was delivered in the same manner, and retained, after decapsulation, between the muscles and superficial integuments, for the purpose of gaining a larger capsular blood supply.

3. In both of these operations the artery alone, the vein alone, and both vessels together were ligated in secondary operations, time being allowed for the healing of the wounds of the primary operation.

4. The kidney was decapsulated, retained between the muscles and skin, and, before closure of the skin incision the cortex was deeply scarred in various areas with a Paquelin cautery at a dull red heat.

The time limit for this paper admits of only a brief résumé of the findings in these experiments. In general they agree with those of Litten. The collateral circulation was not sufficient to replace the direct circulation, even for mere trophic purposes.

In all of the operations a new thick capsule was formed, with capillary and *not* arterial anastomoses. All of the kidneys showed marked degeneration of the cortical epithelium, especially in the outer zone; and all of the new capsules showed a definite tendency to project fibrous tissue into the cortex. In the cauterized kidney the destroyed areas were replaced by cicatrices which blended with the capsule. Where vessels were ligated, the cortex presented the appearance of an early stage of coagulation necrosis.

One cat was in bad general condition at time

of operation. The kidney was simply decapsulated and returned to the abdominal cavity. It was large, and very pale. A month after the operation the animal was killed, and the kidney injected through the artery with carmine gelatine. The new capsule was found to be irregularly thick, and the injection showed only capillary anastomosis with the cortex. The cortex itself showed all the lesions of a large white kidney; and there was not the slightest evidence of any regeneration. On the contrary the tubules of the outer zone were in collapse and the epithelial cells in them completely broken down. Sixteen operations in all were done on eight cats, with the uniform result of positive injury to the normal kidney, and no benefit to the large white kidney.

These findings are in harmony with the conclusions of the paper. At a later date, a more detailed report of the results of the work done in the laboratory will be made.

In conclusion, the writer desires to express his sense of high appreciation of the earnest work and brilliant conception which led Dr. Edebohls to devise this operation and put it into practice; for, while he cannot approve of it as a procedure, it is nevertheless a tribute to the energy and faithfulness with which our American surgeons are pressing forward for the mark of the prize of their high calling, in their ceaseless efforts to relieve a suffering humanity.

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CANCER OF THE INTESTINE.

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My experience with several cases of secondary cancer of the intestine, and especially with two cases of primary carcinoma, specimens of which are here presented, has convinced me that many points of interest are connected with a study of this condition and it is for this reason that this subject has been selected for consideration.

The term cancer, as here applied, is to be understood as including all forms of maligant neoplasms which involve the intestinal tract. Tumors of the carcinomatous type occur with much greater frequency than do the sarcomata. While it is claimed that cancer rarely attacks the intestine primarily, yet a study of the literature for the past twenty years will show that it occurs much oftener than we have been led to believe; moreover, owing to the obscurity of the symptoms, many cases are entirely overlooked and many more are recognized but not reported. Hemmeter[1] mentions 69,083 autopsies including the collections of A. Zemann, Maydl, Müller and Nothnagel, with 5,796 carcinomata, 8.4 per cent. of the whole number. Of these carcinomata, 1,296 were of the intestine.

DeBovis[2] *(Revue de Chirurgie,* June, 1900) has collected 426 cases of cancer of the large bowel, and states that it occurs once in every 2,500 cases of illness, averages one for every 300 deaths in hospital statistics, attacks males more often than females, and is seldom seen in children. Hochenegg,[3] of Vienna, reported to the thirty-first German Medical Congress, 282 cancers of the intestine from his own experience. Nothnagel[4] found in the Wiener allgemeine Krankenhaus from 1882 to 1893, that of 2,125 autopsies upon cancer cases, 243 were of the bowel; of 243 sarcomata examined during the same period, only three involved the intestine. He quotes Müller, of Berne, who found during his experience at Berne that of 521 cancers, 41 of the intestine, and of 102 sarcomata there was but one of the gut, the ileum. Smoler in fifteen years (1883 to '98) out of 13,036 autopsies found 13 cases of primary sarcoma of the small intestine, or one in 1,000 deaths. These statistics show the great rarity of sarcoma of the intestine. With the exception of the rectum, sarcoma of the large intestine is still more rare than that of the small.

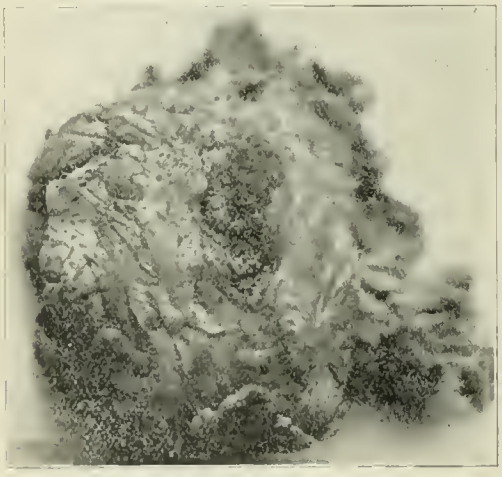
Still Libman[5] gives 59 cases of sarcoma of the small intestine; Jopson and White[6] have collected 22 cases of sarcoma of large intestine; Nothnagel reports 12 cases, Smoler[7] 13, Treves[8] 18, R. H. Harte[9] one case five years of age, and E. A. Robertson[10] has recorded a case of intestinal sarcoma in a child of four near the ileocecal valve.

With reference to the involvement of the different portions of the bowel the reports are not very complete. DeBovis[11] *(Revue de Chirurgie* 1900, Nos. 6 and 12.) gives carcinomata of the small gut 6.3 per cent., sigmoid 11.9 per cent., colon 20.4 per cent., rectum 49.2 per cent; this would leave 12.2 per cent. for cecum and appendix. Nothnagel's 12 cases of sarcoma show one to involve the duodenum, three the jejunum, four the ileum, three the cecum and one the rectum. Smoler's cases show seven in the ileum, three in the ileum and jejunum, and two in the cecum. The writers are all agreed that carcinoma attacks the large bowel with much greater frequency than the small, while sarcoma selects the small intestine and rarely involves the large gut. The appendix is also the seat of both carcinoma and sarcoma, although it occurs very rarely and is usually not recognized as a primary lesion, except by the microscope after the removal or autopsy.

E. Hurdon[12] reports (*Johns Hopkins Bulletin*, August, 1900) a case of primary carcinoma of the appendix, and mentions ten cases in literature of which only the three cases in which diagnosis had been made by the microscope, could be accepted.

Jessup[12] reports a case of carcinoma of the appendix and has collected 13 cases. Gifford[13] has noted a case of primary sarcoma of the appendix. A. V. Moschcowitz[14] presented a paper upon the subject of primary cancer of the appendix to the New York Academy of Medicine, March 5, 1903, and has studied the clinical picture from 16 reported cases, the majority of which, he says were reported after 1896. Dr. Weir, in discussion, reported a case of this condition which came under his observation in 1893 (See *Record* May 23, 1903). H. D. Rolleston[15] (*Lancet*, July 7, 1900) reports a case of primary carcinoma of the appendix occurring in a woman

Fig. 1.



Case I.—Dorsal surface of cecum showing site of fistula where carcinoma had ulcerated through gut.

aged twenty-six years. F. R. C. Whipham[16] (*Lancet*, February 2, 1901), reports a case of primary carcinoma of the appendix. Arthur W. Elting[17] reported to the Medical Society of the State of New York, January 28, 1903, three cases of primary carcinoma of the appendix which he had studied, and 40 cases, including his own, which he had collected from literature. He says that the condition was probably more common than would appear from the record, for in several cases the carcinoma had been only accidentally discovered at autopsy, so that many cases were doubtless overlooked. The disease showed a tendency to develop early but the symptomatology was exceedingly vague.

Men are more subject to carcinoma of the intestine than women. DeBovis gives proportion as 53.9 per cent. males, 46.1 per cent. females, 85 operative cases collected by Cumston and Vanderveer[18] give 63.83 per cent. as the percentage of males. The series of DeBovis is larger and it is probable that his percentage is more accurate.

Sarcoma as shown by Jopson and White in 22 cases involving the large bowel attacks both sexes with about the same frequency; of these, twelve were males and ten females.

Age.—Intestinal carcinoma, according to the DeBovis collection is most frequent from forty to sixty years. In 35 cases occurring from eleven to thirty years, 23 were in females. In 66 cases in the collection of Cumston and Vanderveer, the average is forty-two years—the youngest being nineteen and the oldest sixty-seven years, only eight are under thirty years. The ages of the sarcoma cases range from two to sixty-six years in Jopson and White's statistics, seven were under ten while only three were past forty years.

The variety of carcinoma most frequently met is perhaps the adenocarcinoma, although this point is not covered in many of the reports. Spheroidal-celled carcinoma either of the scirrhus or medullary type is also found. Squamous-celled carcinoma is rarely present except in the rectum, where it springs from the tissues near the anus. Colloid change is observed in some of the cases. The sarcomata most often assume the round-celled type. Fifty per cent. of the cases of Jopson and White were of this variety, 45 per cent. were lymphosarcomata and only five per cent. or one case, was of the spindle-celled variety. The adenocarcinomata rarely cause circular occlusion of the intestine, but this is the usual termination in scirrhus. Any form of malignant disease by infiltrating and matting the intestines together may interfere with the fecal flow.

Two cases of sarcoma are recorded in which a dilatation of the caliber of the intestine occurred. Ewald[19] mentions a case reported by Bessel-Hagen of a seven-year-old boy, in whom, during the course of an extensive sarcomatous infiltration of the jejunum, there had formed an aneurismlike dilatation of the size of a large man's fist. Jopson and White mention a similar condition in their case.

Not infrequently inflammation attacks the tissues around a malignant growth, and this is especially true in cases in which ulceration has begun. This was a prominent feature in my first case and from the number of reported cases simulating appendicitis, I conclude that it has occurred in some of these as well. A lymph-node taken from my case showed inflammatory changes but no cancerous infiltration. Metastasis from carcinoma of the gut seems to occur most often through the blood and the liver frequently suffers from secondary deposits.

Sarcoma, on the other hand, according to Jopson and White in 68.4 per cent. of the cases shows secondary involvement of the mesenteric glands, 26.3 per cent. of the peritoneum, 10.5 per cent. of the lung, 10.5 per cent. of the kidney, 10.5 per cent. of the spleen, 15.7 per cent. of the liver and 10.5 per cent. of other glands.

Tuberculosis is noted as a complication of cancer in a few cases. Invagination is a very frequent accompaniment of this condition in at least ten per cent. of the reported cases.

The cause of these growths is as little understood as that of cancer in any locality, and it is beyond the scope of this article to enter extensively into the discussion of the various theories offered to account for the abnormal cell growth which results in the production of these neoplasms. Among the various theories may be mentioned those of Cohnheim, Ribbert, and many others based on histogenesis. The questions of diet, heredity, traumatism and irritation have been well considered. The trend of recent opinion has been toward the parasitic explanation, the experiments of Schiller, Gaylord and others leading to this view, while the researches of the Harvard Cancer Commissions seem to disprove the claims that a parasite is the causative agent.

Personally, I incline to the parasitic explanation as the best so far offered, it having some weighty arguments in its favor, but consider it by no means proven.

The usual point of origin of these growths cannot be established from the present literature upon the subject. A frequent site is the follicles of Lieberkühn. Undoubtedly the primany carcinomatous growths must spring from the mucous membrane or its glands, and this view is borne out by the reported cases of carcinoma of the appendix, where the disease has been detected at its inception.

The following statements in support of this view are made in connection with H. D. Rolleston's case: "The facts that the growth was most extensive in the mucous coat, that it could be traced into the muscular coats, and that there was no growth in the peritoneum, showed that it originated in the mucous membrane of the appendix and was not a secondary growth, either implanted in the peritoneum or arising as a result of embolism within its substance."

Whipham's case also had its origin in the mucous coat. Jopson and White say that the point of origin in sarcomatous tumors is rather difficult to locate on account of the size of the tumor and the involvement of the bowel, when the subject presents itself to the operator or to the pathologist; but from the data of the microscopical examination of the tumors which they have been able to collect, and from the careful examination of their own cases, it seems to them that the mucosa is the starting point of these tumors and from the normal histology of the intestine, it will be the origin, if we take it for granted that they have their origin in the lymph follicles. The symptoms of either form of cancer affecting the intestine are very obscure, especially in the earlier stages when interference might offer some hope.

Some irregularity of the bowels may early be present but as a rule this is not of sufficient moment to demand attention. After a time uneasiness, discomfort or actual pain in the abdomen appears; owing to the gaseous accumulation this pain is often colicky in character, it is general over the whole abdomen at first, later it may become localized over the seat of the lesion and is often increased on motion. Although present in the majority of cases, the condition may exist for a long time before any appreciable pain is noticed. As the disease progresses tenderness will accompany the pain. If invagination develops as it does in some cases, the pain will become acute and the symptoms of that condition will be added.

Loss of flesh and strength is marked and progressive, greatly out of proportion to the discomfort of the patient, even when the appetite is good and the digestion appears to be normal. Any derangement of the digestion tends to accentuate the loss of strength, and nausea and vomiting may occur, especially if any tendency to constriction of the intestine is present.

Alternating constipation and diarrhea are often observed, being probably due to constriction of the gut, with impaction which after a time excites a diarrhea. When ulceration takes place the diarrhea may become continuous and prove very intractable, even exhausting the patient so that death results. Hemorrhage from the intestine does not often occur, in fact less frequently than we would naturally expect. It is most common in rectal cancers.

Many cases give a history resembling recurrent appendicitis, especially when involving the ileocecal coil; attacks of pain lasting a few days or weeks with tenderness, nausea, perhaps vomiting, tumefaction in some cases, and a slight elevation of temperature, with relief by treatment followed by a recurrence after a few weeks or months, are quite likely to be diagnosed as appendicitis.

My first case presented just such a history and other writers have mentioned this resemblance, notably Spellissy[20] who mentions cases reported by Janeway, Mühsam, Coley and McCosh, and C. N. Dowd[21] reports a case of annular carcinoma of the cecum which followed the usual course of a slowly progressive appendicitis. Eugene Smith also reports a case that had previously been mistaken for appendicitis. In Cumston and Vanderveer's collection eight cases simulated appendicitis, those of Caird, Mayo (2), Bernays, Lockwood, DeLaunay, Pilcher and Vanderveer. Libman reports five cases of sarcoma giving such symptoms.

The most constant symptoms of the disease are tumor which appears in every case lasting for any length of time, and a cachexia which gives this skin a peculiar yellowish cast. Anemia soon becomes marked and the patient is more and more debilitated until he dies of exhaustion, unless obstruction occurs and makes a rapid end of the case. Sometimes, however, the usual symptoms may be absent, and the first indication of the disease be the development of an intestinal obstruction in a supposedly healthy man. An interesting feature of two of the reported cases is the presence of tuberculosis with cancer.

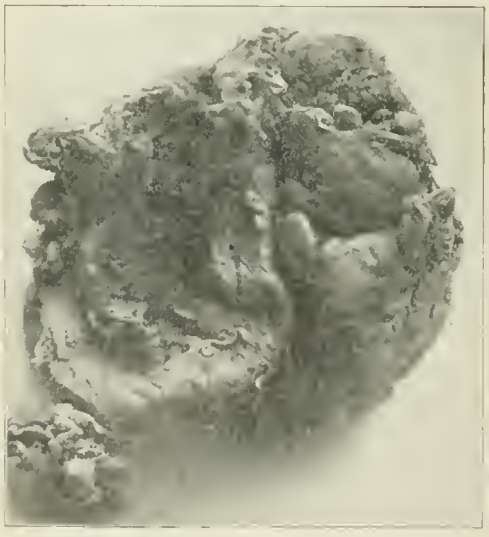
The duration of the disease is very uncertain, death has occurred in some cases in ten days after the first symptoms were noted while others have had symptoms for ten years.

The prognosis is very grave. Unfortunately treatment is usually applied so late that the results are not flattering. Therefore, an early diagnosis and operation will give these unfortunates the best chance, and we should not lose sight of the fact that such conditions are present with some degree of frequency.

Owing to the vague symptoms the diagnosis must largely be made by exclusion. Pain, tenderness, irregular diarrhea, alternating with constipation, dyspeptic symptoms, rapid loss of flesh and strength, even with good digestion, anemia, and cachexia, with an abdominal tumor will make the diagnosis. In the absence of tumor or some of the other symptoms an exploration is justifiable and may often be productive of great good.

Holländer and Löser[22] consider the formation of angiomata of the skin as suggestive of cancer, but this is probably of small diagnostic value, as is the enlargement of the cervical lymphatic glands mentioned by C. Tarchetti.[23] These glands are anatomically so remote from the intestines that they are unlikely to be involved until very late in this disease. The similarity between

Fig. 2.



Case I.—Anterior surface showing colon open and growth within.

appendicitis and intestinal cancer should call for special attention to this point in diagnosis.

The age of the patient is important, especially in making a differentiation between sarcoma and carcinoma. The rapidity of the growth is also important in this connection. Failing by the usual means of reaching a conclusion exploration is clearly indicated.

The treatment is to be largely determined by the extent of involvement. Resection of the intestine and extirpation of the growth offers the only hope of a permanent cure, and this chance though slight should be given the patient whenever practicable, as early in the course of the disease as possible.

Any of the classic methods may be employed. When this procedure is unsafe a fecal fistula may be established to relieve obstruction if present, or to remove irritation from the passage of feces over the diseased tissue. In some cases short circuiting of the diseased intestine by an anastomosis may be practiced with benefit; when the involvement is too extensive to permit operation, palliation is practically all that can be done, as visceral cancer has not responded to the Coley fluid, the X-rays, or to the injection of cancroin of Adamkiewicz.

Case I.—Patient, a white woman of twenty-six years, giving a history of repeated attacks of

Fig. 3.

Specimen from Case II.

what was thought to be appendicitis, came to operation February 17, 1903. At that time she presented a painful tender mass in the right iliac region accompanied by nausea, fever, and a rapid pulse. The abdominal wall was quite rigid. Upon opening the abdomen the mass was found to consist of the cecum and ascending colon which were matted together on their outer side. The peritoneum over this mass was thickened and the tissues around showed evidence of inflammatory changes, while the mesenteric glands were enlarged. Posteriorly a small abscess was found, which communicated with the lumen of the gut through a fistulous tract which had formed as a result of the ulceration of the neoplasm.

The growth extended through the wall of the cecum and colon, firmly uniting them. It appeared inside of the intestine as an irregular elevation about two inches in diameter, and quite firm in consistency. The small gut was not involved, the appendix was normal, and no other growth was discovered in the abdomen. A resection was the only thing possible under the circumstances and this was done by end-to-end suture, the dilatation of the ileum making this procedure comparatively easy. The patient rallied poorly and died 18 hours later from exhaus-

tion due to shock and sepsis. A microscopic examination showed the growth to be an adenocarcinoma. The mesenteric glands presented evidences of inflammation, but were free from malignant involvement.

Case II.—Man, white, age fifty-four years, came to me May 15, 1903, for relief from a fecal fistula which had persisted since the previous September. The fistula, according to his report, followed an operation done at that time for an abdominal trouble causing pain and fever. I found him very anemic, thin and feeble. Examination revealed a fistulous opening at a point half-way between Poupart's ligament and the margin of the ribs, and just external to the outer margin of the right rectus muscle. This fistula was surrounded by a nodular mass about the size of a small melon, which also involved the adjacent skin and muscular tissue. The mass could be isolated from the deeper tissues of the abdomen. A diagnosis of malignancy was very readily made and the patient fully informed of the gravity of the condition, and the slight probability of permanent benefit.

On May 16, 1903, this mass, which consisted of the cecum and ascending colon, a mass of omentum, a foot of ileum, and part of the abdominal wall, was removed and the ileum sutured to the transverse colon. The patient made a good recovery, but from the last report it is probable that he has a recurrence. The neoplasm was made up of a number of gelatinous nodules varying in size from that of a pea to that of an egg. These nodules looked like clumps of grains of cooked sago or rice, but were almost colorless or a pale grayish white, were very friable, readily separated from the mass and had very little vascular connection. One of these nodules was attached to the base of the appendix, which was distended at each end and constricted in the middle, and a number of isolated ones were removed from the peritoneum beneath the liver and on the posterior surface of the stomach. The microscopic examination showed the growth to be a cylindrical-celled carcinoma undergoing a mucoid or colloid change.

Sections taken from (*A*), the opening of the fistulous tract in the abdominal wall; (*B*), the body of the growth about the gut; and (*C*), one of the gelatinous nodules.

(*A*)—The histological findings at this point show the skin of the abdomen very much thickened, particularly the stratum Malphagii. The papillæ are irregular in size and shape, but there is no invasion of the subcutaneous tissue by the epidermal cells.

The connective tissue is infiltrated by small round cells.

The edges of the sections including the wall of the fistula shows an adenomatous growth composed of irregular branching tubules lined by several layers of columnar cells, irregular in size and shape, with nuclei staining lightly in some and deeply in others.

The general appearance of the glandular structure is not that of the intestine but more like the utricular glands of the uterus. As we go out into the tissue around the fistula these glands become dilated and filled with a homogeneous substance taking on a blue tint with the hematoxylin stain In some the walls are still lined with columnar cells; in others the cells are separated from the reticulum of connective tissue, and lie in the center of the space surrounded by the homogeneous substances in which is imbedded remnants of cells. As we get further away from the fistulous tract the adenomatous structure is entirely lost, and there is seen only the reticulum filled with homogeneous substance. The cells on the alveoli, where they are found in the center, show various degrees of mucoid degeneration.

(*B*).—The section from the body of the growth shows the same histological picture, with the exception that the more typical adenomatous structure is not seen, only the dilated alveoli as described above.

(*C*).—In the gelatinous nodules there is a thin capsule of connective tissue throwing off trabeculæ throughout the nodule forming irregular alveoli, none of which are lined by cells, but some are filled with the homogeneous substance alone and others have cells surrounded by this substance.[24]

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FRACTURE OF THE BASE OF THE SKULL AS A CAUSE OF EPILEPSY: REPORT OF CASE.

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THE following case of epilepsy, occurring in a magnificently developed and apparently healthy man, eleven years after a fracture of the base of the skull, is thought worthy of record. It is especially noteworthy, since epilepsy resulting from fracture of the base is indeed rare.

The case to be related also shows that the subject is entirely free from morbid hereditary predisposition. Moreover, he is remarkably without evidences of degeneracy; and is not only posi-

tively free from specific taint, but his epilepsy has developed beyond the so-called epileptic age. A casual search of the literature reveals but one other well-authenticated case of epilepsy caused by fracture of the base of the skull.[1] It is possible, however, that the absence of such observations is the result of one of those peculiar literary oversights which are not uncommon in medical literature, and when attention is once directed to the question, the report of other cases may follow.

These two cases, however, convince me that the statement of Pearce Bailey, "that fracture of the base does not appear in the causation of epilepsy,"[2] is unwarranted. In view of the fact that Dr. Bailey edited Golebiewski's *Atlas and Epitome of Diseases Caused by Accidents,* in which the other case mentioned is not only referred to but its history given, we would scarcely expect him to have made the former statement, nor to be the author of the following: "As convulsions play so minor a rôle in the acute symptoms of fracture at the base, we would hardly expect epilepsy to be a consequence of that injury, and it does not seem to be one."[3]

One cause for my belief that epilepsy results from fracture of the base more frequently than has heretofore been thought, resides in the curious fact that Bailey is the only authority, whom I can recall, who has published a study of the question, and is the author of specific statements in reference thereto.

The search of the literature which I have made establishes the fact that epilepsy is an infrequent sequel of basal fracture. The cause of this infrequency is probably owing to the fact that when the base is fractured the contiguous brain structures are the ones most likely to suffer. These are not structures whose injury is liable to result in convulsive disease, and fractures of the base where the lesions are severe, extending to the convexity, usually result in death.

The important fact that basal structures, even the basal cortex, do not seem to possess the convulsive elements of the convexity, is undoubtedly the explanation of the relative infrequency of epilepsy as a consequent or remote result of basal fracture. Yet from our knowledge of the irritating effects which may arise from injury to any portion of the brain, we are prepared to believe that cerebral injury wherever located may, in after years, result in epilepsy. Concussion of the brain, particularly in early life, is recognized as a not uncommon cause of epilepsy. Fracture of the base is an accident that usually occurs in adult life. It certainly cannot take place without concussion of the brain, and recognizing that concussion of the brain in the adult may produce epilepsy, we must, if we follow a logical course of reasoning, believe that fracture of the base will be far more liable to produce epilepsy than concussion alone.

The following case, which furnishes the text for this article, was observed through the courtesy of Dr. L. J. Smith, of Cleveland, Ohio: W. R., aged thirty-two years; occupation, polisher; married, and the father of two healthy children. His wife is healthy and has never had any miscarriages or stillbirths. His family history is exceptionally good. His father and mother are both living and in good health; there is no history of nervous taint or alcoholism either in the immediate or fairly remote branches of the family. He had but one brother, who was healthy, but died at the age of seventeen years of typhoid fever. His personal history reveals the fact that he never had need of a physician until his injury. I can also testify to this as a matter of personal knowledge, since I knew him as a healthy child and young adult. At the age of eighteen years he fell into the hold of a vessel, a distance of 12 feet, striking squarely upon his feet. He was picked up unconscious, when it was found that he was bleeding from the mouth, nose, and left ear. The vessel on which he was sailing "put into" Toledo, Ohio, and he was taken to St. Vincent's Hospital, where it was stated that he had suffered a fracture of the base of the skull. There were no marks or contusions on the body, thus rendering it certain that he struck squarely on his feet. At this time he weighed about 160 pounds. For a period of four weeks following his injury he was completely unconscious and at times quite delirious. After the disappearance of his delirium and unconsciousness, his mind appeared to be a perfect blank. He had forgotten everything, including his own name. His parents brought him to his home in Lorain, Ohio, where he was compelled to relearn practically everything. His speech was markedly affected; the character of this speech disturbance I have been unable to ascertain definitely.

He returned to sailing eight months after his injury, but did not appear to fully regain his faculties for over a year; in fact, some of his friends insist that he never has been quite the same since his injury. One year following his injury the captain of the vessel on which he was the mate states that he had some sort of a "spell" at night, in which he jerked and twitched and was unconscious. Eleven years later, in June 1899, he had what was then supposed to be his first epilepsy; but his friend the captain recently recalled the undoubted epilepsy which he suffered one year following the injury. In this last attack he bit his tongue and frothed at the mouth, presenting all of the classical characteristics of a major epileptic seizure.

In the same year, December 4, and again December 28, he suffered a severe convulsion. The following year he had one in February and one in December. In 1901 he had five convulsions. No minor seizures were observed except when he was taking the bromides.

His attack is not preceded by aura. His wife states that he appears to be irritable for several days preceding his epilepsy, and that during the seizure his eyes are turned to the right and upward. The face is also turned to the right with the chin over the right shoulder. The body is

then twisted around following, as it were, the eyes and head. This entrance into the tonic stage is usually without cry. The clonic spasms appear quickly, and are severe. After recovery from his attack he suffers only from general weakness and numbness, neither of which is localized.

Examination.—Patient is a large, handsome, blue-eyed man, weighing 190 pounds and is as perfect a type of physical manhood as one would wish to see. His head is large and well-shaped. He presents as few marks of physical degeneracy as any man I have ever examined. He is keenly intelligent, does not use either alcohol or tobacco, and is an artist of no mean pretensions. He possesses all of the attributes of a well-balanced man, both physically and mentally. His heart, lungs, and abdominal organs are perfectly healthy. The special senses are normal. He has never suffered from headache or dizziness except as a result of a recent attack. The deep reflexes are equal and perhaps slightly exaggerated; no ankle clonus, no jaw-jerk. His pupils are equal and symmetrical, and react promptly and normally to light and accommodation; palpebral apertures are equal; there is some nystagmoid twitching of the eyes while looking to the extreme right or left. The right disk appears to be slightly congested. The right angle of the mouth is somewhat lower than the left, and that side of the face appears to be slightly relaxed; when he whistles it is out of the left side, although by effort he can pucker the lips so as to whistle from the center of the mouth. The labionasal folds are equal. The labiomental crease is slightly deeper on the left than on the right side. There is no other evidence of paralysis, nor can I elicit any history of such disability.

In conclusion, it may be of interest to quote the brief report of the case of Golebiewski: A painter, twenty-nine years of age, who had frequently suffered from lead-poisoning, fell from a height of twenty-five feet on April 30, 1889. Lesion: fracture of the base of the skull with paralysis of the left arm. The patient was treated for one month in the hospital and for another month in the dispensary. He then resumed work. On September 4, 1889, he was again examined with reference to insurance, because of headache and dizziness. On November 11, 1889, he felt entirely well, and resumed work. He was then considered to be fully capable of self-support. On March 16, 1895, he suffered an epileptic attack, which was repeated at intervals. The connection between the accident and the epilepsy was proved, and he was allowed 100 per cent. insurance.

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New Italian Hospital.—A hospital to provide for the wants of the Italian section of Philadelphia is to be established at Tenth and Christian streets. It is to be known as the Fabiana Italian Hospital.

MEDICAL PROGRESS.

MEDICINE.

Etiology of Chronic Habitual Constipation.—H. Lohrisch (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 5 and 6) explains the cause of many cases of chronic constipation as follows: An excessive absorption of the ingested food goes on in the intestines whereby the amount of dry residue in the feces is considerably diminished in the feces. The intestinal bacteria will find their culture medium deficient in nutritive principles and will not readily propagate so that much less indol, skatol, etc., are formed than under normal conditions. As these substances have the important physiological function of stimulating the intestinal musculature, less active contraction will occur where they are produced only in small amounts. It follows that in most cases of constipation the intestinal musculature may be in perfectly normal condition.

Infection of the Skin in Typhoid.—A mild type of furunculosis is very often observed in typhoid fever patients. A more severe type localized about the sacrum and buttocks was observed by D. L. Edsall (Univ. Penn. Med. Bull., March, 1904) in the wards of the hospital and which was apparently transmitted from patient to patient. The eruption began as a vesicular one and rapidly spread, becoming pustular. It did not seem to have any marked effect on the general condition of the patients. Cultures showed the presence of the *Staphylococcus aureus*. From the standpoint of the general clinician the chief interest in this series of cases lies in its relation to ward hygiene, and especially to certain details in nursing. In this case the infection was probably carried by attendants and utensils and when the proper precautions were adopted, the infection was checked. The infection here was evidently more virulent than that of ordinary furunculosis and during typhoid, patients are perhaps more liable to cutaneous infections than at other times.

Hydatid Cysts in Lungs and Heart.—The rarity of this condition makes the following case of interest, especially as it closely simulated pulmonary tuberculosis. R. H. Quill (Jour. Royal Army Med. Corps, April, 1904) reports the case with symptoms resembling phthisis pulmonalis. There was an almost complete absence, however, of the physical signs of that disease. Under hospital treatment the patient improved, but one evening was suddenly seized with intense dyspnea and went into collapse, which proved fatal. Autopsy showed numerous hydatid cysts in both lungs and in the right ventricle. In the latter were a number of loose cysts, one of which had evidently blocked the pulmonary artery and caused death. All the other organs were free. The case is a remarkable one. The origin of the infection was unknown—the patient had not been away from England and his previous health had been good.

Prognosis in Typhoid Fever.—The sudden appearance of one or other serious complication in what seems a mild and favorable case of typhoid fever, makes it necessary to always give a guarded prognosis. And to determine in what manner many of the different symptoms and complications are to be regarded, R. E. Sedgwick (Birmingh. Med. Rev., Feb., 1904) has made a study of 460 cases. His conclusions are: (1) Mild cases are commonest in the young, fatal complications likely in the old, therefore the younger the patient the more favorable the prognosis. (2) If onset is gradual, the case is likely to be mild; if onset is sudden, the case may be severe. (3) The amount of fever alone is not an important factor. (4) Sudden changes in the pulse suggest complications. (5) Early nervous symptoms indicate either a severe attack or lack of resist-

ance on the part of the patient. (6) Constipation is more favorable than diarrhea, and meteorism is unfavorable as it facilitates perforation. (7) Hemorrhage occurs chiefly in serious cases and the earlier it occurs the more serious it is. (8) Most of the complications tend to recovery; the most fatal being perforation, peritonitis and pneumonia. Among the complications were 24 cases of phlebitis, three of parotitis, three of tibial periostitis, one of periostitis of the sixth rib, one of arthritis of the shoulder, two of pleurisy with effusion, two of neuritis, one of necrosis of laryngeal cartilage with permanent tracheal opening. All of these recovered. One case occurred in a patient with Bright's disease, one with diabetes, and one with active pulmonary tuberculosis, but in none of these cases was the primary disease made worse by the typhoid. The case of tuberculosis was complicated by thrombosis of the left femoral vein, but recovered and actually gained weight during convalescence. Albuminous urine was found in 75 per cent. but had no relation to the severity of the disease.

Cardiac Dulness in Gastric Carcinoma.—Clinicians are still groping for the early signs and symptoms of this condition. W. Gordon (Lancet, April 9, 1904) believes that he has found a sign which, while not invariably accurate, seems to be present with sufficient constancy to render its recognition important. In conclusion, he states that great reduction or obliteration of the normal cardiac dulness is common in cases of carcinoma of the alimentary canal. This loss of cardiac dulness does not appear in the very earliest stages, but may precede cachexia and loss of weight. It is rarely observed in non-malignant cases, but rarely absent in the later stages. It does not seem to occur in cases of sarcomatosis. In doubtful cases, its presence is suggestive of carcinoma, its absence is slightly suggestive of the absence of carcinoma, if the symptoms under consideration have lasted for several months.

Iodide of Potassium in Lobar Pneumonia.—So very few specific remedies are at hand for disease that the claim which is urged for iodide of potassium as being practically a positive cure for pneumonia certainly deserves close investigation. H. Altschul (Med. Rec., March 26, 1904), during the past two years has treated 62 cases by this method without a death and over three times that number have been treated by his colleagues with similar results. The fact that he has given from 500 to 3,000 grains of this drug per day to these patients without untoward symptoms would certainly seem to indicate that the disease at least causes a special tolerance of the drug. In pointing out the applicability of this remedy to pneumonia he mentions the following important conditions which demand attention: (1) The toxemia; (2) the diminished respiratory surface of the lung; (3) the relative hypoleucocytosis with reduced alkalinity and increased viscosity of the blood; (4) the venous engorgement and laboring heart with a tendency to distention of the right heart; (5) the impaired action of the kidneys and glands; (6) the pyrexia and (7) the cough. He cites numerous authorities to show that when the iodides are given in these large doses there is a marked secretion of free iodide from the mucous membranes and that this has a marked germicidal effect upon the pneumococcus. A marked hyperleucocytosis is always considered a favorable sign in pneumonia and a hypoleucocytosis almost invariably means a fatal termination. The greatly increased activity of the lymphatic system and the great glands, following the use of the iodide of potassium is well recognized and is believed to assist in some degree in the causation of a hyperleucocytosis. Diminished alkalinity of the blood is believed by many to be an important factor in lessening the resisting power of the human body and this condition has been frequently demonstrated in severe cases of pneumonia and typhoid fever. For the purpose of alkalinizing the blood we know of no agent so effective as the potassium salts. Another important action of potassium iodide is its power to reduce arterial tension and thus relieve the burdens of the heart. The viscosity of the blood is also believed to be decreased, diuresis and diaphoresis increased. In analyzing the effect which this drug has upon the course of pneumonia it was found that in spite of the uniformly good results, the duration of the disease was not diminished and in none of the cases did the disease end by crisis. The temperature remained very moderate and the symptoms were markedly relieved. The potassium salt was used instead of the sodium because of its more rapid absorption and its greater alkalinizing power. When the diagnosis is made a dose of 10 to 15 grains is at once given and increased by 5 to 10 grains every two or three hours until defervescence is well established. However soft the pulse may be, the dosage is kept up, irrespective of the quantity, the only guide to the dosage being the regularity of the heart, and especially the character of the second pulmonic sound. Cardiac stimulants were seldom necessary, but strychnine and whisky were sometimes used. The iodide was given in a fifty per cent. solution with milk. A slight coryza and gastric disturbances appeared in a few cases but soon abated when the drug was still further increased. In a large number of cases from 1,000 to 1,500 grains were given in twenty-four hours without annoyance to the patients and the condition of the heart should be the sole guide to the amount that it is advisable to give.

Value of Leucocyte Counts During the Course of Typhoid Fever.—The value of the total and differential leucocyte count in the diagnosis of typhoid fever is very generally understood now, but the premonitory signs of complications which may be derived from frequent blood examinations do not seem to be fully appreciated. H. A. Higley (Med. Rec., March 26, 1904) reminds the profession that as the disease progresses toward the third and fourth weeks the relative number of mononuclears increases while the polynuclears decrease. If, therefore, frequent counts are made and an increase in the relative number of polynuclears is found, especially if a gradual increase in the total number of leucocytes is also observed, some complication should be strongly suspected. Numerous investigations of this nature have shown that the leucocyte count may arouse one's attention to the possibility of a complication at least twenty-four hours before other signs of a pneumonia, abscess or even perforation have developed. Furthermore, upon the appearance of a temperature late in the disease, a differential and total count is very helpful in deciding between a complication and a relapse.

OBSTETRICS AND GYNECOLOGY.

Tarnier's Principle of Forceps Rotation in Posterior Occiput Positions.—The mere engagement of the head at the inlet with the occiput posterior belongs to the initial stage of labor, says W. R. Wilson (Am. Jour. of Obstet., Jan., 1904). It foretells little of the future of labor and is usually only a temporary position. On the other hand, the fixation of the head in the cavity of the pelvis with the occiput directed to one or the other of the iliac joints means a condition of arrested labor which requires the application of forceps, as favorable delivery cannot usually be accomplished without artificial rotation. Theoretically the ideal application of forceps is that with the blades applied to the sides of the head with the concave borders directed toward the occiput. This latter condition per-

mits flexion to take place within the grasp of the instrument and establishes a parallelism between the longitudinal axis of the head and the long axis of the blades. But in posterior occiput cases there is no such symmetrical application of the forceps. The French writers teach that it is possible, while the head is transverse to apply the forceps to the head with one blade opposite to the sacrum, and the other opposite to the symphysis pubis, the concave border of the blades looking toward the occiput. Such an application will give the operator control of the head and permit him to rotate the occiput still further around until the latter comes under the symphysis. But practically, in the majority of cases, the oblique position of the head, where it can be overcome at all by manual deflection, is only changed temporarily. The classic application of the blades, say in an R.O.P., is equally disadvantageous. In the first place the desirable relation of the blades to the head is lacking. Secondly, owing to the imperfect flexion of the head in these cases, the forceps naturally grasp the sides of the head in a vertical direction with the points of the blades infringing upon the submastoid regions, thus increasing the danger to the child. Therefore, it would appear that practically the application in the transverse diameter is the most feasible—grasping the head in one or the other of the oblique diameters running between the frontal and parietal regions, according to the position of the head in the pelvis. Often the child's safety depends upon the rapidity with which the rotation is performed. Rotation may be delayed in difficult cases, owing to absence of molding and flexion. The head can by artificial rotation be carried out of its oblique position as it passes the bony outlet, and the mothers' interests are most favorably guarded. The vaginal wall may easily be caught by the edge of the blade and lacerated, or by forcibly twisting the blades the vagina may be drawn from its connective tissue base with a resulting separation of the surrounding muscles from their fascial attachments. A violation of the principles of rotation, as shown by Tarnier, means serious injury to the mother's soft parts. If rotation were attempted without regard to the principles, about to be described, the unhappy dilemma would arise of either injuring the pelvic floor by traction upon the widely separated blades in an oblique application to the head in an immovable position, or of injuring the vagina by improper rotation of the blades within it. The handles should be rotated in such a way as to permit the ends of the handles to describe a wide circle of revolution, leaving the tips of the blades as a fixed point. This procedure may be simplified by pressing the ends toward the side of the pelvis in a direction toward which the presenting part is to rotate without attempting to rotate the handles. A persistence in this lateral position of the handles will result in a gradual change in their position, yielding to the direction imparted to them by the altered position of the blades. Where such lateral pressure applied to the ends of the handles is apparently not effective, one of three possible influences prevents rotation: (1) The attempt at rotation has been made too early; (2) the head may be too large to undergo rotation; (3) the natural tendency may be for the occiput to rotate posteriorly, or in an opposite direction to that in which artificial rotation is attempted.

Recurrent Fibroids of the Uterus.—The subject of recurrent fibroids has been occupying the attention of gynecologists for some time past, inasmuch as the very nature of the pathology of the growth is not positively known, various observers considering it in different lights. V. S. Grousdeff (Roussky Vrach, No. 9, 1904) reports the case of a woman of forty-four years, who entered the hospital with a considerable hemorrhage and severe pain in the lower abdominal region. She was said to have been operated on two years ago. Bimanual examination elicited an enlarged, round immovable and painful uterus. The finger per opened os detects a soft smooth round body, which is easily turned about by the aid of forceps. The discharge is sanguineous with a slight odor of decomposition. Diagnosis of polypus was made; this was removed under chloroform by the aid of scissors and forceps, followed by a curettage of the uterus. Microscopical examination suggested an ordinary submucous uterine fibromyoma. The patient returned in about eleven months with a history of recurrent hemorrhage and pain (she having undergone in the interim another operation for the removal of a polypus) which caused the author to suspect a recurrent fibroid, but as a radical operation could not have been performed on account of the patient's exhausted condition, the growth was again removed and the uterine walls were vaporized. The radical operation (abdominal) was performed two months later. The uterus was freed from the adhesions to the surrounding organs, the vessels were ligated, and the uterus was removed entire. The uterus was greatly enlarged, and, with the enclosed tumor, weighed 1,020 grms. Microscopically the growth turned out to be a sarcoma, and the patient had to be operated on later on for generalized spindle-shaped sarcomata of several abdominal organs with a lethal issue. The question that the author raises is as to whether the growth was primarily a sarcoma or only a fibromyoma which degenerated into a malignant growth. He is inclined to consider it a primary sarcoma. As regards treatment of such cases the radical operation would seem indicated in all the cases of the so-called recurrent fibroids.

Metrorrhagia at Fourteen.—Instances of severe metrorrhagia in adolescents, at or about the commencement of menstruation are quite rare. The following case came under the observation of W. K. Walls (Brit. Jour. of Obst., Jan., 1904): Hilda P., aged thirteen years and four months had had four "periods" and for three months following these there was almost a continuous copious discharge. Occasionally it would be arrested for a day or a night. Treatment during this period consisted of rest in bed and cold diet. Various medicines were given, mostly of little avail; ergot seemed to increase the amount of discharge. Hot douches had no effect. Vaginal examination showed an enlarged cervix and considerable discharge. The external os was widely dilated, and the uterus antiflexed. Curettage was performed. Apart from these particulars there appeared to be nothing wrong with the uterus. The curetting was followed by gauze plugging, which was removed the next day, and the discharge continued to a slight degree for two weeks. For eight months following this the periods were normal. Though hemophilia is generally at the root of these cases, there was no evidence that it was the cause of the condition in this instance. Dr. Donald, who examined the tissue removed by the curette, found the endometrium characterized by a great amount of interglandular small-celled infiltration; the glands themselves were for the most part rather small, but here and there one or two of unusually large lumen; there was no increase of the vessels. It would appear that this condition resembled that found in metrorrhagia of certain adults and has been styled as "idiopathic endometritis."

Abdominal versus Vaginal Hysterectomy.—The decision whether to perform the ablation by one or the other of these two routes will depend in the early stages upon the particular predilection of the operator. John

B. Deaver (Am. Jour. of Obst., Jan., 1904) strongly opposes vaginal hysterectomy for cancer of the cervix uteri except in the presence of obstacles necessitating such a course, *i.e.*, a very stout abdomen, nephritis, or old age. The abdominal operation offers an increased space for necessary manipulation, greater security against hemorrhage and less risk of injuring the ureters, one is also better able to keep beyond the area of diseased tissue; a larger portion of the broad ligaments together with their lymph channels can be excised and the individual glandular enlargements noted and removed. Injury to the ureters is not so liable to happen because of the better exposure of these structures. In carcinomata uteri Deaver does not believe that it is necessary to dissect out the iliac glands, as the additional mortality from operation is not repaid by a lessened recurrence. Extension downward into the vaginal epithelium, forward into the bladder and backward into the rectum, is much more common than metastases into the iliac glands. Cancer of the body of the uterus requires complete hysterectomy and in the early stages the organ may be removed through the vagina.

The Beginning of Labor.—In attempting to explain the causes which bring the series of physiological acts that result in the expulsion of the fetus at the end of pregnancy, L. Blumenreich (Arch. f. Gyn., Vol. 71, No. 1) was led to make a number of exhaustive animal experiments. He sought especially to determine whether the gravid uterus responds more readily to stimuli than the organ when non-pregnant. In order to rule out spontaneous contractions of the uterus, the experimental animals were placed in a bath of warm saline solution. It was found that in the presence of an excess of carbonic acid or an insufficient supply of oxygen, the uterus of the gravid rabbits reacted much less strongly than that of the non-pregnant animals. The observations of Runge were confirmed, namely that lack of oxygen affords a more powerful stimulus to uterine contraction than an excess of carbonic acid. In not a single instance was it possible to bring on labor by respiration in CO_2. Mechanical irritation affords a much more marked stimulation to the gravid uterus, and moreover meets with a more ready response than in the non-pregnant organ. By means of mechanical irritation alone it was often possible to induce premature labor. These experiments seem to prove quite conclusively that mechanical influences play a much more important rôle in the induction of the labor act, than changes in the gaseous contents of the blood. If this be assumed, the probabilities are strengthened by the fact that these mechanical sources of irritation are increased from day to day by the increase in the volume of the gravid uterus.

The Experimental Production of Hydramnion.—The question of the origin of the liquor amnii still remains a much disputed one. A contribution to its solution is furnished by B. Wolff (Arch. f. Gyn., Vol. 71, No. 1) in an experimental research on the production of hydramnion. He first determined the normal amount of liquor amnii in rabbits at various periods of pregnancy and found that it increases up to the middle of pregnancy and then decreases in amount. If in a pregnant rabbit both kidneys are removed, it is found that no increase has taken place in the amniotic fluid of those fetuses which are in the first half of pregnancy, but a correspondingly greater increase is noted in nephrectomized animals the nearer full term is approached. In one instance the increase amounted to 21 times the normal quantity, which may with truth be called an artificial hydramnion. This increase cannot be ascribed to any transudation on the part of the mother, as nothing was present in the latter in the nature of an edema or ascites. It seems more likely, in the opinion of the author, that as a result of the extirpation of the kidneys, the urine elements which would otherwise have been excreted by the mother, have been transferred to the fetus and stimulated the kidneys of the latter to correspondingly greater activity. This also explains the fact that no increase takes place in the earlier part of the pregnancy, because here the function of the kidneys has not yet begun. By means of cryoscopic and comparative chemical researches the author hopes to further substantiate these claims.

Ethyl Chloride in Gynecology.—The advantages of this agent as a general anesthetic in this field are commented on by E. E. Montgomery and P. B. Bland (Jour. Am. Med. Ass'n, April 2, 1904). They claim that it is of especial value for administration to allay pain and relieve muscular spasm in abdominal pelvic examinations. Its employment will frequently permit of an accurate diagnosis in what would otherwise be an obscure case. The short time required for anesthesia, the rapidity with which the patient will recover from its effects, and the decreased tendency to nausea and vomiting, will allow its employment in office practice, with the assurance that the patient can return home without the need of prolonged attention. The same indications will lead to its employment in all operations of a minor character where prolonged anesthesia will not be required. In enfeebled patients requiring vaginal incision for pelvic drainage, it is ideal, for administration need not be begun until everything is prepared for incision, so that the patient will be under its influence only a few minutes. Probably its most effective employment will be as preliminary to the administration of other anesthetics. A nervous woman may be brought under the influence very quickly, without struggling, and convalescence from the final anesthetic is more rapid because she has not undergone any complete saturation with it. The principal disadvantages are that the patient passes under and out of its influence so quickly that the administrator must be unusually expert to avoid, on the one hand, profound anesthesia, and on the other, the emergence from its effects at an important stage of the operative procedure. The expense of the drug also precludes its use in a general clinic.

The Generative Cycle of Woman.—Ovulation with its attending sexual excitement is to the mammal what blossoming is to the plant, an evidence that an embryo seed is ready for impregnation. Among subhuman animals it is confined to distinct seasons and pregnancy and lactation follow always in due course. But in the human female, owing to more complicated conditions of life, pregnancy has not always followed ovulation, therefore ovulation has become more frequent, and menstruation has developed, menstruation being the depletion of a hyperemic, uterine mucous membrane which normally should have received an impregnated ovum. Hence every menstruation is the sign of a disappointed pregnancy, and is, therefore, an abnormal state. Such are the theories advanced by Jennie G. Drennan (Canadian Jour. of Med. and Surg., Jan., 1904), and she holds that if every woman had become pregnant when ovulation took place, as the lower animals do, menstruation would not have developed. But as civilization advanced mating became more difficult, the race more sexually inclined, because more pleasure-seeking, and woman, having less manual labor to perform, directed more attention to her sexual functions. She even, by her artificial life, cut down the period of lactation from the normal two or three years to eight or ten months, because the periodical hyperemia of the ovary began again that soon after pregnancy was completed, and, depriving the breasts of some of their blood-

supply, changed the quality of the milk. Unquestionably the sexual, social and religious life has been closely interwoven, and as mating became a more difficult matter, festivals became more frequent. In more primitive peoples religious feasts were really sexual orgies, and nowadays we find that those who are deprived of sexual relations find an outlet for their energies in various religious or philanthropic enterprises.

Central Paralyses of Pregnancy.—Paralysis during pregnancy of a hysterical nature is less frequent than generally assumed; in most cases R. v. Hosslin (Münch. med. Woch., March 8, 1904) found a definite organic basis. Genuine apoplexy is not uncommon immediately before, during and after parturition and is ascribed to hypertrophy of the heart, increased resistance in the vessels of the lower extremity and toxic influences which alter the vessel walls. As a rule the hemorrhage is very large and involves the central ganglia, lateral ventricles and internal capsules, so that the prognosis is very doubtful. The onset is sudden with coma, hemiplegia and paralysis of the facial and hypoglossal nerves. Another form of paralysis depends upon nephritis and is a manifestation of uremia; it generally occurs in primiparæ of advanced years and depends upon a circumscribed edema of the brain or upon hemorrhage. Prodromal symptoms such as headache, nausea, vomiting with or without edema and albuminuria are common and the paralysis generally sets in after one or more eclamptic seizures. On account of the deep coma the paralysis is often overlooked but may manifest itself as hemiplegia, monoplegia, hemianopsia or amaurosis; when dependent on edema it is often transient though the patient may still die after considerable improvement has set in. These cases are often wrongly looked upon as hysterical, since of such short duration. A large percentage of paralyses depends upon thrombosis of the cerebral vessels owing to puerperal infection or severe metorrhagia after birth or miscarriage. The onset is very gradual, consciousness is generally preserved and rapid improvement may follow. Convulsions frequently accompany the paralytic stroke, which is hemiplegic in type. The cause of cerebral embolism may rarely be a thrombus which is carried from a pelvic inflammation or a phlegmasia alba dolens, through an open foramen ovale into the cerebral circulation; in most cases, however, it is an ulcerous endocarditis during the puerperium. It is common for old valvular lesions to recur during pregnancy but endocarditis may also develop during this time, very insidiously with palpitation, dyspnea and a blowing, systolic murmur at the apex. The onset and course of the paralysis are similar to that depending on thrombosis. Rare conditions which cause paralysis are cerebral tumors, puerperal encephalitis, metastatic cerebral abscess after puerperal fever and progressive paralysis. Spinal lesions are of less importance, since most have already existed before and are hardly influenced by pregnancy. There is a distinct connection, however, between the latter and traumatic paraplegia and compression myelitis and occasionally a severe paraplegia will set in after copious hemorrhage. Less frequent conditions are meningomyelitis, spinal apoplexy, encephalomyelitis, acute and subacute polyomyelitis, multiple sclerosis and a chronic form of myelitis running the course of a spastic paraplegia; it is without doubt that any one of these diseases may develop during pregnancy in hitherto healthy women, so that the cause must be ascribed to some autointoxication. Both animal experiments and clinical experiences show that conception is not impossible when severe cerebral or spinal lesions are present. With cerebral disease, pregnancy usually runs its normal course if the life of the mother is not destroyed; with spinal disease, the patient is often unconscious of her condition and pregnancy may be interrupted when the disease sets in suddenly. Even parturition is hardly affected by cerebral paralysis and in the spinal forms the labor pains are usually of normal intensity. In many cases the delivery is easier and more rapid than in normal individuals.

A Rare Case of a Foreign Body in the Vagina.—Foreign bodies are introduced into the vagina with many aims in view—as curative means, for masturbation, for induction of abortion, etc. There are many cases on record of pessaries permitted to remain in the vagina for many years; though usually harmless, they may in some certain cases, induce considerable inconvenience and eventually injuries to the vaginal walls and in the neighboring organs. Orloff (Roussky Vrach, No. 11, 1904) reports the case of a woman of sixty years who was admitted to the clinic with pains in the lower abdomen and vagina, dyspnea, cough and purulent discharge from the vagina. After her second child she felt while at her work severe pains in the abdomen and a dragging down sensation, and to obtain relief she introduced into the vagina a croquet ball which she found in the garden. This was thirty years ago. This brought immediate relief, and during all these years there was no disturbance in the functions of either the bladder or the rectum. Examination elicited senile atrophy of the vagina at the introitus and higher up the finger struck a round, hard body. Neither the urethra nor the rectum seemed to any degree compressed. In view of the contracted introitus the foreign body could only be extracted piecemeal. Its substance remained unchanged, fresh and compact. The vaginal walls showed the presence of colpitis and here and there ulcerations. The patient left the clinic completely improved on the fifth day.

Hemorrhages from the Ovary.—The possibility that sufficient hemorrhage may take place from a corpus luteum which has undergone cystic degeneration, to really endanger life has only been proved in isolated cases. O. Burger (Zeitsch. f. Geb. und Gyn., Vol. 51, No. 2) believes that the case which he reports affords undoubted evidence of the cause of the bleeding and that there is definite symptom-complex which must be reckoned with, by which the condition can be diagnosed in those cases where it is possible to rule out a pregnancy. The patient, a woman of thirty-seven years, married nine years, but had never conceived. The menstrual history was normal and general health good. Her last period did not stop at the usual time but continued for three weeks, in slight amount. During this time she subjected herself to unusual exertion. She was suddenly seized with severe abdominal pains and vomited some blood. On admission to the hospital, a ruptured ectopic was diagnosed and laparotomy done. The abdomen was found full of blood, which apparently came from an ovarian tumor on the left side, the tubes being normal. The patient made a good recovery. The histological examination of the specimen showed a tendency in the ovary to a cystic degeneration of the Graafian follicles, certain of which had assumed considerable size while their walls had been very much thinned out. The presence of some pathological hyperemic condition caused a severe hemorrhage into the cavity which resulted in a rupture of the cyst wall, after which the blood entered the peritoneal cavity. The reason that no hematocele was formed may be explained by the fact that no inflammatory processes were present around the ovary. The continued bleeding during the three weeks may be ascribed to the constant hyperemia brought about by the woman's exertions during her menstrual period. The case is of considerable interest.

Loss of Blood During Labor.—More or less uncertainty still exists as to what shall be considered a normal amount of blood lost during a labor. From statistics relating to over 6,000 labors, F. Ahlfeld (Zeitsch. f. Geb. und Gyn., Vol. 51, No. 2) has deduced certain facts which he believes to be of practical value. It was only by the aid of a specially arranged bed that he was able to accurately estimate the exact quantity of blood lost in each case. In the middle of the mattress is an opening, accommodating a funnel which catches the blood and conducts it to a graduate placed under the bed. The blood is separately measured which comes away before the birth of the placenta, that which passes with the placenta, and lastly, that which is voided after the labor proper. Care is taken that the amniotic fluid and urine are carefully excluded. If at any time the amount of blood in the graduate exceeds 400 c.c., the attending physician is at once called. In the author's experience, the placenta is wont to remain in the vagina in the majority of cases, if the patient is not disturbed, from one and a half to two hours, and this he believes is the normal course. In 13 per cent. of cases, where the placenta was delivered spontaneously, a greater amount of blood (673 c.c. on an average) was lost than where the birth of the placenta was delayed. In estimating the influence of previous births on the amount of hemorrhage it was found that the increased amount was due rather to the increasing size of the children and their placentæ than to the number of previous labors. The length of the expulsive period did not seem to have any marked effect on the amount of blood lost. The most bleeding takes place during the first hour after the child is born. In pathological cases the same procedure was attempted, *i.e.*, to wait whenever possible with the expression of the placenta, for about two hours. In over 21 per cent. of the cases this period of waiting could not be adhered to, but the large number remaining shows that only for definite reasons, such as hemorrhage, should the third stage of labor be hastened. The after-effects of this loss of blood on the patient's condition are somewhat a relative matter. In normal, strong individuals, a loss of even 1,000 c.c. may not be followed by any evil consequences. For weak or sick persons no rule can be formulated. Where 1,500 to 2,000 c.c. are lost, it was found that in the majority of cases only slight or moderate degrees of anemia resulted. When the amount lost exceeds these figures, the result depends more or less on the patient's condition and whether the loss is sudden or gradual, four cases being reported where the woman lived even after having lost 3,000 c.c. In considering the after-effects of hemorrhage, the author believes that his statistics show that the danger of puerperal infection is increased in proportion to the amount of blood lost. The mother's ability to nurse does not appear to be very much affected, as about 50 per cent. of the breast-fed children reached their birth weight by the tenth day. It seems from these observations that healthy women can experience a considerable degree of hemorrhage during labor without being seriously influenced.

Gonorrhea in the Puerperium.—There is a considerable divergence of opinion as to the influence of gonorrhea on the puerperal state, some claiming that the disease has very little effect, others that considerable disturbance may be caused. A. Martin (Berl. klin. Woch., March 28, 1904) reports 13 cases of chronic gonorrhea which he kept under observation during their labor and puerperium. In none of these cases were any symptoms present which could be attributed directly to the venereal disease. In addition they seem to confirm the assumption that so-called chronic gonorrhea is no barrier to pregnancy, in most instances, even where there is a localization of the disease in the cervix or, as in one of the cases, there is present a gonorrheal salpingitis. In none of these patients did abortion come on. In 12 cases the labors were favorable, in one of which an acute exacerbation of the gonorrhea may have had some influence in hastening the labor by the rise of temperature. In the remaining case, extensive adhesions of the placenta delayed the third stage, but subsequent examination showed that this condition was not due to the gonococci. In four cases the puerperium was practically normal, in the remainder there was a rise of temperature, coming on rather late, and this the author considers a characteristic of gonorrheal infection. Involution moreover did not appear to be interfered with and no perimetritic involvement occurred such as has been noted in the acute cases. Although the author considers that the relation of gonorrhea to pregnancy must still furnish a doubtful prognosis, he does not agree with most authors who assume that it is "ad malem vergens." The treatment should be limited to local douching with normal salt solution, to which antiseptics may be added, but the most satisfactory results were obtained with applications of sterilized yeast both to the cervix and the urethra. Where gonorrhea is recognized as the cause of disease in the adnexa or the uterus, radical operations should be resorted to with caution, and the hope of spontaneous cure should not be abandoned too early. In isolated instances the severity of the complications must necessarily be taken as the guide; and where operation is called for, he considers that evacuation of the pus through the vagina forms the most satisfactory procedure.

Fetal Thyroid Hypertrophy with Maternal Eclampsia.—The following interesting case is reported by W. E. Fothergill (Brit. Jour. of Obst., Jan., 1904): Mrs. D., aged thirty-seven years, a short, stout woman, had had two early abortions and a third pregnancy. In eighteen months she again became pregnant but aborted at the third month. April 14, 1902, she became pregnant for the fifth time. On December 3, 1902, her urine was normal. Her thyroid became enlarged shortly after the inception of the pregnancy. On Dec. 7, she developed edema of hands and feet, and on Dec. 16 her urine contained 0.2 per cent. of albumin. On Dec. 27 she developed headache and vomiting, and later still, all the signs of a typical eclampsia. Under the proper treatment this cleared up; and on Jan. 1 she went into labor. A small female child was easily born; forceps being employed. It cried freely immediately, and some venous distention at the neck at once became visible. After the mother had received attention, the examination of the child revealed the presence of a large, solid tumor, representing the whole of the thyroid gland. This was covered by an enormously dilated venous plexus. The head and neck became more and more intensely congested, and it became clear that the circulation, as demanded by the pulmonary circulation, could not be established. The child died a few minutes later. For twenty-four hours after the completion of the labor there was complete anuria, but the temperature had been quite normal and the pulse-rate 140. Thyroid extract was given to the extent of 30 grains. Two days later the amount of urine voided was about five pints. On January 4 the pulse rate had fallen to 110, with good, large amounts of urine still being passed. During the next few days the patient's condition gradually became normal. The post mortem on the fetus showed the liver to be very large. The enlargement of the spleen appeared to be due to overgrowth of all the tissue elements, especially the glandular elements. Most examples of "congenital goiter" occur in "goiter districts," and in goiterous families. A form of enlargement of the

fetal thyroid may follow the administration of potassium chlorate to the mother under certain circumstances. In many cases of habitual abortion the administration of small doses of potassium chlorate is followed by the extension of pregnancy to its normal limits. Careful examination of the abortive ova expelled by these patients show that death is due to extensive thrombosis within the intervillous space. Large doses of potassium chlorate are well known to produce certain destructive changes in the blood, the therapeutic use of the substance having produced death in this way, especially in children. As to the occurrence of hypertrophy of the fetal thyroid, it may be argued that a toxic state of the maternal blood is to be blamed for this, and for abortions not prevented by the administrations of the potassium chlorate. It may also be argued that the hypertrophy of the thyroid was the direct result of changes in the maternal blood caused by potassium chlorate.

PHYSIOLOGY.

Complete Inversion of Viscera.—In visiting the autopsy room of the hospital M. K. LENTZ (Roussky Vrach, No. 9, 1904) came across the body of a woman of sixty years in whom the following transposition of viscera was found: the entire right lung was found on the left half of the chest, while the left lung was seen in the right chest. The heart was demonstrated on the right half of the chest; its left ventricle to the right and the right one to the left. In correspondence with the position of the ventricles, the aorta and the pulmonary veins issued from the right ventricle, while the pulmonary arteries and the vena cava originated from the left. The arch of the aorta was directed from left to right. From the innominate artery there branched out, instead of the right, the left carotid and subclavian arteries, while the right carotid and subclavian issued directly from the aorta. The descending aorta was placed to the right of the spine. The esophagus was found to the right of the spine. The liver was seen on the left, the spleen to the right, the left lobe of the liver was on the right side, and the right on the left. The stomach was transposed to the left of the median line, but its curvatures were normally situated, namely the large externally and the small internally, it thus seemed as if the stomach had been rotated 180° and then transported to the right half of the body; the gastric opening was found to the right and the pylorus to the left of the spine. The duodenum was turned with its convexity to the left, instead of the right as is normal. The head of the pancreas was found on the right, and its tail to the left, thus its head was toward the liver and its tail toward the spleen as in the normal relation to these organs. The ascending colon and the cecum with the appendix were placed in the left iliac region, with the descending and sigmoid to the right.

The Absorptive Capacities of the Skin.—It has long been thought that the power of many substances to traverse the skin from without inward, is very slight. SCHWENKENBRECHER (Arch. f. Anat. u. Physiol., Feb. 24, 1904) in a long series of experiments on mammals, finds that a large number of substances are readily absorbed by the skin. These are mostly soluble in water and oil and their absorption is dependent upon the osmotic laws that govern the cells in general. The experiments were conducted on white mice by immersing the animals in the respective solutions. The following were readily absorbed: ethyl alcohol in aqueous or oily solution, amyl alcohol, ethyl ether, chloroform, iodoform, iodether, cyanogen compounds, aldehydes (formaldehyde), chloral hydrate, ketones, phenol, lysol, resorcin, guaiacol, creosote, salicylic acid, anilin, antipyrin. As regards the alkaloids, the author found that strychnine nitrate is not absorbed by the normal skin. The same is true of basic strychnine. Nicotine is absorbed. The author cites Bouchut who found narcotic symptoms in children in whose skin opium had been placed, and Kunkel, who speaks of smugglers suffering from the toxic effects of nicotine absorbed from the tobacco hidden next to the skin.

Changes in the Blood after Muscular Exercise.—Healthy young men taking regular physical exercise have a normal blood count of 5,600,000 red blood cells and 8,800 leucocytes per cubic millimeter, the ratio being 1:636, according to P. B. HAWK (Am. Jour. Physiol., March 1, 1904). There is an immediate increase of reds and an accompanying leucocytosis after running, walking, bicycle riding and swimming. The immediate increase of the red cells is inversely proportional to the length of the exercise period. The leucocytosis is inconstant. The maximum average increase of 22.5 per cent. in the number of the red corpuscles is caused by the short swims, the greatest increase being secured after participation in water polo for three minutes. Long bicycle rides produce the minimum average increase of 9.7 per cent. As regards the leucocytes the maximum average increase followed the exertion incident to the long swims. Short swims produced the minimum average increase. The increase in the number of red corpuscles produced by muscular exertion is probably due primarily to the passage into the circulating blood of a large number of cells lying in various parts of the body and inactive before the time of the muscular exercise. The leucocytosis is due to the changed distribution of the leucocytes and their accumulation in the peripheral circulation.

Some Phenomena of Animal Pigmentation.—A field of physiological research, which has been vigorously tilled during the past few years and which promises practical results from the standpoint of the pathology of pigmented neoplasms, is the subject of the formation of animal pigments. R. C. SCHIEDT (Am. Jour. Physiol., March 1, 1904) reports the results of his interesting experiments in this line. He deprived oysters of one of their shells and exposed them to pure light, with the result that the animals secreted pigment over the whole of their body. The chemical or blue rays produce the same pigment, but not so with the red rays, which, however, protect the animal against the pathological changes due to irritation. The pigment is formed in the ectodermal organs of the epidermis, and in the organs of the mesoderm, as the heart it is embodied within the endothelium and connective tissue fibres. On placing the animal in darkness all pigment disappears. The author also finds that pigments produced under pathological conditions are not permanent, thus differing from the pigments formed under physiological influences. The author also believes that pigment granules are excretory products of protoplasm caused by pathogenic conditions, being reabsorbed when the conditions are removed. In this he agrees with Loeb. In the oyster the absence of the protective shell causes special irritation, perhaps a secretion of chromatin by the nucleus, and a restitution in darkness in which the animal is accustomed to dwell. This secretion is probably the result of a chemical process, as shown by the effect of the chemical or blue rays.

Contribution to the Physiology of the Thymus.—An investigation of the physiology of the thymus gland was made by D. N. PATON and A. GOODALL (Jour. of Physiol., March 29, 1904) with interesting results. In guinea-pigs the thymus continues to increase in size till the animal reaches a weight of about 300 grams, or an age of about two months, *i.e.*, at about the time when the animal becomes capable of reproduction, and after

that time it begins to degenerate. Removal of the thymus even on the day of birth has no influence on the growth of the animal. Removal of this organ causes no change in the number or character of the erythrocytes, but is accompanied by a decrease in the number of leucocytes, which, in the animals observed, lasted about two months. All varieties of leucocytes took part in this decrease. Thymusless animals which became pregnant showed a normal leucocytosis. Thymusless animals infected with tubercle showed the same increase or altered proportion of leucocytes as is manifested by animals with the gland intact. The injection of terebene caused a leucocytosis in thymusless as in normal animals. The injection of broth cultures of staphylococci and streptococci did not usually cause the marked leucocytosis in thymusless animals which it produced in normal guinea-pigs. The resistance to the toxins of streptococci and staphylococci is diminished by removal of the thymus, which removal, however, has no effect on the resistance of the animal to diphtheria toxin.

Distribution of Nitrogen in Urine.—The various nitrogenous principles in the urine of healthy individuals were determined by A. Landau (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 5 and 6) as follows: Total nitrogen was estimated according to Kjeldahl. A certain portion of the urine was then precipitated with phosphorvolfromic acid and the nitrogen determined in this precipitate: this corresponded to ammonia, the purin bodies, kreatinin and the pigments. The nitrogen of the filtrate gave the figures for urea and the amino-acids. The urea itself is best determined according to Schöndorff, the purin bodies after Camerer's method and ammonia according to Schlösing. The following average figures were obtained during health: Purin-nitrogen 1.01 per cent., ammonia-nitrogen 2.42 per cent., urea-nitrogen 90.87 per cent., amino-acid-nitrogen 2.89 per cent. The kind of ingested proteid seems to have little influence except that the amino-acids are rather high after meat and low after casein. The amount of amino-acids can also be increased by the ingestion of amino-acids such as asparaginic acid, but not if bicarbonate of soda was given at the same time. The only known amino-acid excreted with the urine is hippuric acid, but probably a number of other similar bodies are voided. Excessive or deficient nourishment seems to have no influence on the distribution of nitrogen in urine.

The Macrophagocytic Reactions of the Human Spleen.—There are present in the spleen, according to E. Gauckler (Jour. de Physiol., March 15, 1904), macrophagocytes whose function is that of erythrolysis and leucolysis, which are normal processes of the spleen. Any cause which leads to adulteration of the blood, particularly that which underlies icterus, exaggerates this macrophagocytosis. Beside the splenomegalies of infectious or congestive origin, there are forms attributed to the macrophagocytic reactions. These are the result of the excessive number of the macrophagocytes, or of the hypertrophic sclerosis of the organ induced by the excessive hemolytic reactions. The macrophagocytes produced in the spleen in excess pass by way of the blood-vessels to the liver. The relationship between splenomegaly and hepatitis may be a double one. Either the adulteration of the blood consequent upon a primary lesion of the liver produces hemolytic and sclerotic changes in the spleen, or else the adulteration of the blood is primary, and the secondary lesions in the liver are produced by the macrophagocytes brought there from the spleen.

Chemistry of Proteids.—Owing to their exceedingly complex composition, proteids alone have failed to yield to chemical analysis and much further work is necessary before a probable formula can be given. Some proteids have been very carefully studied so that almost all the molecules which enter into their composition are known; thus edestin yields no less than eighteen. It is, however, impossible to say how these radicals are joined together, whether in the form of an open or closed ring, a chain or both. A. Kossel and H. D. Dakin (Münch. med. Woch., March 29, 1904) have studied a group of proteids known as the protamines which may be looked upon as the least complex of these bodies. By the common analytical methods they can be split up into only five simpler bodies, viz., aminovalerianic acid, a-pyrrolidincarbonic acid, serin, urea and diaminovalerianic acid. The latter two are firmly united as a compound known as arginin. The proteolytic action of ferments is the same as that of hot acids since the same decomposition products result and this holds true for the simple protamines as well as for the more complex albumins of the higher animals. In many organs, however, an exceedingly active ferment, arginase, may be detected, which can do more than acids, even after prolonged action at boiling temperature, since it is able to split arginin readily into its two components. This action is due to the splitting up of an imide group by chemical union with water.

Experimental Toxic Leucocytosis.—A series of experiments to determine the effects produced in the blood of dogs by the intravenous injection of putrid horse serum, the relations existing between body temperature and leucocytosis and how changes in the walls of the blood vessels affected the latter, are published by J. G. Silverman (Univ. Penn. Med. Bull., March, 1904). It was found that the injection of putrid horse serum causes a primary hypoleucocytosis, in which the polymorphonuclear neutrophiles are diminished and the mononuclear elements increased, followed by a secondary hyperleucocytosis which is characterized by (*a*) a great increase in the polymorphonuclear variety; (*b*) an appearance of cells on the border line of myelocytes, as well as an actual presence, in the severe cases of leucocytosis, of mononuclear neutrophyles in small numbers; (*c*) a deficiency in hemoglobin which was found in 60 per cent. of the dogs experimented upon, associated with an appearance of normoblasts in the blood. There is no definite relation between the leucocytosis and the rise of temperature; the grade of the leucocytosis is not proportionate to the height of the temperature, and the maximum rise in one occurs independently of that of the other. Inhalations of amyl nitrite and injections of potassium nitrite cause a primary hyperleucocytosis in a very short time, due probably to the dilatation of the capillaries. Potassium nitrite administered before the injection of peptone lessens the duration and the extent of the disappearance in the number of the leucocytes during the hypoleucocytosis, and thus disproves that the leucocytes are destroyed. These results lead to the belief that the decrease in the number of the leucocytes in the beginning of leucocytosis is due to their obstruction and imprisonment, caused by the narrowing in the lumen of the capillaries, owing to the irritation of the endothelium by foreign toxic substances.

Medical Necrology.—An Austrian statistician finds that the average lease of life of a medical practitioner is sixty years. Deaths due to tuberculosis only amount among them to 7 per cent., thus showing how careful they are in taking precautions against infection. On the other hand, fully 40 per cent. of doctors die of heart disease and nervous collapse.

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SATURDAY, MAY 21, 1904.

THE FUNCTION OF THE EOSINOPHILE.

EVER since Ehrlich's discovery and demonstration of these peculiar white blood cells containing large granules which stain so well with eosin it has been an insistent problem in the minds of pathologists and physiologists as to what the special function of these cells might be. It seems impossible not to conclude that they must have a definite and very specialized purpose seeing that their constitution is apparently so different from that of all the other white blood cells. In a paper read before the meeting of the Association of American Physicians, held in Washington last week (see Society Proceedings in this week's MEDICAL NEWS, page 997), Dr. E. L. Opie, of Baltimore, gave the results of his studies of the relation of cells with eosinophile granulations to bacterial infection which seem to show that these leucocytes play a very important rôle in the matter of vital resistance to bacterial invasion.

Within a few hours at most after virulent infection of an animal in the peritoneal cavity all the eosinophile cells in the peripheral circulation have practically disappeared. With milder and more chronic infections it may take longer for the eosinophiles to disappear, but eventually it becomes very difficult to demonstrate any of them in blood drawn from the surface of the body. On the other hand, if the infection is of a kind to which the animal does not eventually succumb, the eosinophiles begin to make their appearance once more and then increase until they have reached a number twice as great as they were originally. This increase of the eosinophiles is accompanied by a corresponding relief from the symptoms produced by the infection until the animal has completely conquered it. For instance, when guinea-pigs are injected with *Bacillus pyocyaneus* the eosinophiles will be found to have disappeared entirely from the peripheral circulation at the end of twenty-four hours. This form of infection is usually recovered from. With the decrease in the eosinophiles there is an increase of polynuclear leucocytes, but after the twenty-four hours have elapsed the eosinophiles begin to make their appearance once more and on the fifth day they have risen to double the normal number for the animal experimented on.

Under these circumstances the fate of the eosinophiles during their interval of disappearance becomes a very interesting problem, which, however, Dr. Opie seems to have solved completely. When the injections of infectious material are made into the peritoneal cavity the eosinophiles begin at once to accumulate in the blood-vessels of the omentum and the mesentery. Positive chemotaxis is so powerful that even an hour after the injection of virulent infectious material these granulated white cells can be seen adhering to the walls of the veins of the mesentery and can even be detected beginning to migrate through the vessel walls into the surrounding tissues. Here they do not act as phagocytes apparently, certainly not to any very marked degree, though a number of large mononucelar cells can be seen performing phagocytic action. As a matter of fact, alongside these macrophages of Metschnikoff, the eosinophile cells seem to be more or less inactive. Foreign observers reported having seen eosinophile cells when lying in contact with bacteria apparently direct their granular material in a more or less continuous stream toward that pole of the cell near which bacteria lie with the gradual disappearance of their granules. This curious biological phenomenon was supposed to represent some protective action on the part of the eosinophiles, but the observation has not been confirmed.

A very interesting set of observations seems to show that the eosinophiles may, as myelocytes, find their way from the bone marrow through the intervening circulation to the spleen and be re-

tained there for some time, in the meantime multiplying rather freely. This has undoubtedly led to the conclusion that eosinophiles frequently originate in the spleen.

While the eosinophile reaction seems to differ very markedly regarding the reaction of vegetable and animal parasites, for, as is well known, with *Trichina* there is an increase in the number of eosinophiles to be found in the peripheral circulation, Dr. Opie is of the opinion that this difference is more apparent than real and that the eventual increase of the eosinophiles in bacterial invasions which are not fatal shows that these cells, as in the case of infection with animal parasites, play some important rôle in the maintenance of vital resistance against parasites of all kinds.

INFLAMMATION OF THE OMENTUM.

That infection is the etiological factor of omental adhesions is probably admitted by all surgeons. In his important experimental work on the subject, Brink comes to the very just conclusion that this is absolutely essential, because he found that simple scarification of the peritoneum was insufficient to produce adhesions between it and the omentum, while if the parts were injected with *Staphylococcus pyogenes* such adhesions always occurred. As still another proof of the part played by infection in the production of omental adhesions, we would point out that when they spontaneously occur, that is to say, without traumatism, operative or otherwise, it is always after some infectious process has taken place in the abdominal cavity.

How does the infection spread? A study of the diseases of the female genital organs, such as metritis, ovaritis, salpingitis brings into prominence the close anatomical relationship of these organs. This relationship also extends to the pelvic peritoneum. A pelvic peritonitis, or rather a torpid attack of pelvic peritonitis, is invariably accompanied by an inflammation of the female genital organs, and although it has been upheld by Treves that the omentum never reaches as far as the pubis, the fact nevertheless remains that in many autopsies and laparotomies the lower border of the omentum is found not only reaching the pubis but it dips down into the pelvic excavation. The omentum, therefore, can readily come in contact with infected pelvic viscera.

This involvement of the omentum in pelvic inflammatory processes has been the subject of both clinical and pathological studies. In 1900 Braun pointed out that a tumefaction of the omentum frequently occurs after its partial resection in the radical operation for hernia and in certain gynecological affections. Inflammation of the omentum reveals its presence by severe abdominal pain, resistance on palpation accompanied by symptoms of intestinal occlusion. Its evolution is either toward resolution, abscess formation or chronicity.

Pathologically, inflammation of the omentum has been more especially observed during operations for appendicitis. The organ is red and presents a granular aspect, due to an excessive vascularization. Small extravasations or little hemorrhagic foci are observed and, not infrequently collections of rosy serum mixed with pus are found, especially among the adhesions. Microscopically one finds the lymphatics gorged with leucocytes.

Such is the acute form, but the process may evolute toward the chronic type and then the omentum retracts, thickens and finally forms a tumor. On examination, the omentum is found hyperemic and in many places a number of white, hard nodules, varying in size can be distinctly felt in its substance. These nodules are foci of subacute inflammation of the organ, which microscopically are found to contain broad bands of adult connective tissue fibers, representing vascular connective tissue of inflammation. Inflamed interstitial cells mixed with a few young connective tissue cells, form small masses situated between the adult connective tissue fibers. Occasionaly the fat lobules have disappeared in these foci and the few fat cells that still exist show evidence of irritation. Their nuclei are multiplying and some cells may contain as many as ten or twelve. The cell itself is diminished in size.

In other instances the fat lobules exist in quantities, so much so that they may form true lipomata.

The endothelial structures become hypertrophied while in places blood pigment is found indicating a former hemorrhage during the acute stage of epiploitis.

The omentum becomes retracted. This affects the stomach directly. Traction on the omentum does not produce gastrectasis, strictly speaking, but a gastroptosis results and secondarily a true dilatation of the viscus may ensue. Debet demonstrated experimentally that traction on the omentum was transmitted to the pylorus by means of the greater curvature and that under certain conditions that might produce a fold which diminished its caliber; but in the greater number of cases this is not the principal obstacle to empty-

ing the stomach, because when one draws the omentum down the movable portion of the duodenum comes down along with the stomach, while the second portion remains fixed and between the fixed and movable portions of the duodenum a decided curvature results which decreases the lumen and becomes an obstacle to the free emptying of the stomach.

Stasis of the stomach contents results; vomiting ensues accompanied by all the ordinary symptoms of fermentation and its consequences. A temporary dilatation occurs, which finally becomes permanent.

It would seem then of importance to search for lesions of the appendix or the female genital organs in cases presenting intractable digestive symptoms, for in still another instance can it be shown that interference with gastric motility is an efficient cause of great gastric distress. Surgical remedial measures offer hope in some of these conditions.

FREQUENCY OF LEAD POISONING.

THERE seems to be no doubt now in the minds of those best situated to have definite knowledge in the matter that lead poisoning is much more frequent in this country than is usually thought. Two years ago Prof. Osler announced as the result of the careful collation of the statistics of Johns Hopkins Hospital for a period of twelve years, with those of St. Bartholomew's Hospital, London, for the same time, that gout was comparatively much more frequent in this country than had been imagined. He added that American gout was usually earned and not inherited and that the two underlying pathological conditions on which it developed were changes in the system brought on by too free indulgence in malt liquors and the presence of lead in the tissues. According to the statistics of Johns Hopkins Hospital, for every four patients admitted to St. Bartholomew's Hospital suffering from gout three patients suffering from the same disease are admitted to Johns Hopkins. Possibly at least one-third of our American cases of gout are due to chronic lead poisoning.

It is too often the custom to think that plumbism gives very characteristic symptoms that can scarcely fail of recognition. Lead colic, plumbic constipation, wrist-drop and the blue line on the gum, while usually present, are by no means necessarily in evidence, or their occurrence may be so masked by other circumstances as not to be definitely characteristic. Very few painters entirely escape the effects of lead in the system. This is especially true now that the painting of ceilings and of the walls of high buildings compels painters to work in such positions as to have the lead on their brushes above their heads for a good part of the time while they are at work. Recently Sir William Gowers again reminded the profession that it is almost impossible for a painter to escape the absorption of lead in toxic amount under such circumstances.

The tradition in the painting trade, however, is that only about one in three or four suffer from lead poisoning and these are supposed to be unfortunate individuals in whom an idiosyncrasy causes even small amounts of lead to produce serious effects. Such individuals suffer from the very beginning of their occupation as painters. It is well recognized that there is a marked idiosyncrasy existing in certain people, which makes them liable to suffer from even minute amounts of lead. It has happened repeatedly in country houses that while a whole family has taken the water from a newly constructed reservoir flowing through new lead pipes, only one member of the family has suffered from the small amount of lead that was dissolved in the water owing to the presence of slight amounts of carbonic acid or some of the carbonates in it. No human system, however, will stand contact with lead for a protracted period without suffering severely, and it is the latent cases which prove eventually more disastrous than the frankly acute toxemias that develop early in the association with lead. The lead kidney may develop very insidiously. Serious lesions of the nervous system may give only slight symptoms for a considerable period. A little awkwardness in the use of the forearm and hand may be noticed for many months before some injury, such as a sprain of the wrist, brings on an attack of characteristic wrist-drop showing how saturated with lead the nervous tissues have become.

In his recent series of clinical lectures Sir William Gowers calls attention to the ease with which cases of lead poisoning may be overlooked, unless the physician's attention is especially called to this question. One of the cases which he discusses at some length had evidently come to him from America where the diagnosis of hopeless and progressive muscular atrophy had been made, though his discovery of a lead line on the gums caused him to give a favorable prognosis at once. In this case at first sight the gums seemed normal. But on more careful inspection and espe-

cially on examining the gums of the upper jaw with a lens, several spots were found at which there was a slight separation from the teeth and at these points Sir William found two or three indubitable fragments of the characteristic lead line.

In the course of this lecture Sir William dwells on the characteristics of the lead line on the gums, as he has seen it. He says it is typical in proportion as it approaches Euclid's definition of length without breadth, always provided it is black. Contrary to the usual text-book declarations in the matter, according to which it is said to be blue, Gowers has never seen any color in it. It is never present unless the gums are slightly separated from the teeth. It may exist only at two or three isolated spots or on the tips of the projections of gum between the teeth. It can then only be found by a most careful and thorough search on the upper jaw as well as the lower. He insists that the smallest fragment, if distinct, is as significant as the most extensive deposit.

Gowers emphasizes particularly the number of forms of nervous disturbance that may be due to lead poisoning. The brain itself may suffer and saturnine encephalopathy is not very infrequent and is usually attended by optic neuritis. The common peripheral neuritis of which wrist-drop is the characteristic manifestation is only one of its effects. A slow chronic atrophy of the muscles of the forearm and hand, affecting first the interossei and developing exactly like spinal atrophy, is far more enduring than the wrist-drop and may even become permanent. Optic nerve atrophy alone, without brain symptoms, may be due to lead, and it may cause slight forms of sclerosis of the cord. Tremor may occur and chronic convulsions that simulate epilepsy. He has also found hysteria, especially in predisposed subjects. While headache is a frequent effect, neuralgia of great severity may be the most prominent symptom of the disease. On the other hand, symptoms of general nervous weakness without any definite localization may be due to lead poisoning that gives no other manifestation of the toxic process at work in the system. This affection only too often masquerades as neurasthenia and is but another proof of the abuse of that unfortunate word.

Philadelphia Hospital.—Miss Mary McDonnell has been appointed assistant chief nurse in the Philadelphia Hospital. She comes from the Massachusetts General Hospital and takes the place made vacant by the resignation of Miss Lippincott.

ECHOES AND NEWS.

NEW YORK.

Alumni Association College of Physicians and Surgeons.—The annual meeting of the Association will be held at Sherry's, Wednesday, May 25, 1904, at 8.30 P.M. Members are requested to notify the Secretary, Dr. H. E. Hale, 150 West Fifty-ninth Street, before Tuesday, May 24, if they expect to be present.

Tuberculosis Clinic.—Dr. Thomas Darlington, President of the Board of Health, decided to open a night class at the Tuberculosis Clinic of the Department of Health at 967 Sixth Avenue, the hours being from 8 to 9 P.M. on Monday, Wednesday and Friday. This evening class began last Monday, May 16, 1904. Two doctors and two nurses are in attendance and all medicines are furnished free of charge. Since the opening of the Clinic on March 1, 1904, from 250 to 300 patients a week have been in attendance from 9 A.M. to 4 P.M. This new clinic is for those patients who are unable to attend during the day. Special cards for the reference of patients to the clinic for diagnosis or treatment will be furnished on request. Physicians and others interested are cordially invited to visit the Dispensary.

Commencement at Woman's Medical College.—Five young women were graduated last week at the forty-first annual commencement exercises of the New York Medical College and Hospital for Women. The young women who subscribed to the Hippocratic oath, administered by Professor M. Belle Brown, the dean of the faculty, were May Darrach, Ethelyn Augusta Frances Fuller, G. Holm, Isabella Thompson Smart and Mary Sutton Macy. The prize for the highest average for four years' work was awarded to Miss Macy. Mrs. Jean Williams won the junior prize in medical jurisprudence, Miss Edwina Frick the sophomore prize for the best work in anatomy and Miss Eleanor Van Buskirk the freshman prize for highest standing.

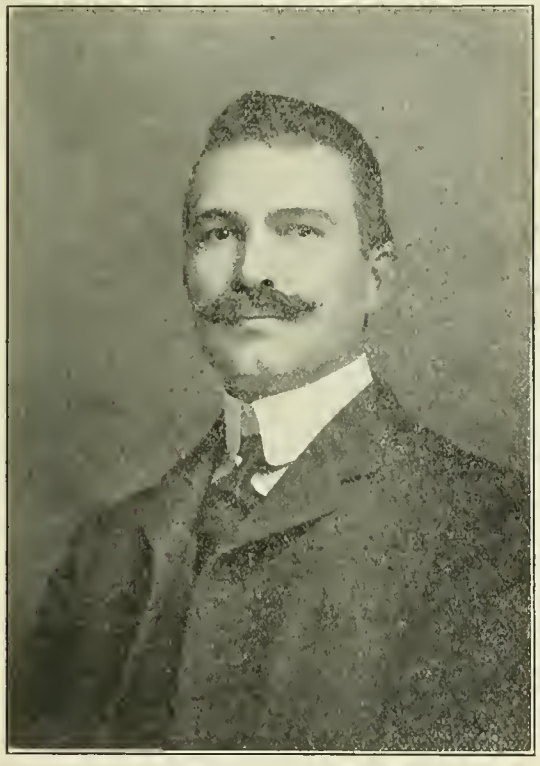
Examination for Superintendent, Rome State Custodial Asylum.—An open competitive examination will be held at Albany, Buffalo, New York and Syracuse, June 3, 1904, for the position of superintendent of the Rome State Custodial Asylum. The authorized maximum salary is $4,000 with maintenance for the superintendent and family. The statute requires that the superintendent "shall be a resident of this State, a well-educated physician and graduate of a legally incorporated medical college," and must "have had a suitable experience and training of not less than three years in the care and treatment of the mentally defective classes, epileptic or insane." Subjects of examination and relative weights: Laws relating to the institution and the commitment, care and treatment of the dependent and defective classes, 1; institutional care, training and treatment of the custodial class of feeble-minded persons and idiots, 3; institutional supervision, administration and discipline, 2; education, experience and personal qualifications, 4. Persons desiring to enter the examination must execute applications on forms supplied by the Commission and file them in its office before noon of June 1. For application blank, address Chief Examiner, State Civil Service Commission, Albany, N. Y.

Director of Pathological Laboratories, Bellevue Hospital.—The Civil Service Commission will hold a competitive examination June 7, 1904, for Director of Pathological Laboratories, Department of Bellevue and Allied Hospitals. Applications will be re-

ceived from residents of the State of New York until May 28, at 61 Elm Street. The salary is $5,000 a year and the successful candidate will be required to devote all his time to the work, abstaining from private practice or connection with a medical college.

Addition to Loomis Sanatorium.—Through the efforts of the Children's Guild of the Loomis' Sanatorium a Children's Cottage has just been opened in connection with the Annex where it is possible to care for twelve children under fifteen years of age. There are in this cottage two supported beds and the other ten patients will be received at the regular Annex rate of $5 per week. As a competent nurse is in charge, even young infants can be admitted. Candidates for admission to this division of the Sanatorium need not be cases of pulmonary tuberculosis necessarily but glandular and bone cases and such surgical cases as have been operated upon and require such climatic advantages and environment as can be accorded them during convalescence, will be received. A separate dietary adapted to the requirements of these young patients will form a feature at the Children's Cottage. Applications for admission may be made direct to the physician-in-chief or to any member of the medical staff of the Sanatorium.

New Head for Bellevue.—At a meeting of the Board of Trustees of Bellevue and Allied Hospitals, held last Friday, a resolution was adopted appointing Dr. William P. Spratling, Superintendent of the Craig Colony for Epileptics, at Sonyea, N. Y., to the Superintendency of Bellevue Hospital, vice Dr. William Mabon, resigned. Dr. Spratling will begin his new duties on June 1. Dr. Spratling's career has been one of exceptional promise. He was born in Chambers County, Alabama, October, 1863, and was graduated in medicine from the College of Physicians and Surgeons of Baltimore in 1886. Following graduation he was Demonstrator in Chemistry and Assistant Resident Physician at the Maryland Maternity Hospital. For five years he was on the staff of the New Jersey State Hospital for the Insane at Morris Plains, and in 1895, after a competitive examination, was appointed Superintendent to the Craig Colony for Epilepsy. Following his appointment Dr. Spratling went for a second time to Europe, continuing his study of institutions for the insane, and on his second visit he lived for some time in the German Colony for Epileptics at Bielefeld. He has been instrumental in converting a wilderness at Craig Colony into a well-laid out village of sixty-six buildings, and an equipment capable of taking care of fully 10,000 people, and has brought into practical realization the hopes and plans of those interested in epilepsy at the Colony, making it a model for all time and for all countries. With such a leader New York City can hope for great things in the future.



Dr. William P. Spratling.

Defense of Insane Hospitals.—Dr. William Hirsch recently sent to the *Times* a long letter explaining away apparent abuses of the insane in State hospitals and exonerating the attendants. He says in part: "From time to time there are reports published in some of the daily papers of alleged 'cruelties' against patients committed to the Manhattan State Hospital. There are constantly about 4,000 patients under treatment in the hospitals of Ward's Island, and if we assume that each patient has an average of five relatives who are concerned in his welfare, these articles are likely to startle about 20,000 people and to give them infinite worry by making them believe that their relative is at the mercy of heartless brutes, and is subjected to the most atrocious cruelties. It is for this reason that I think somebody who is thoroughly familiar with these hospitals should be heard on this subject.

"A great many insane persons suffer from a symptom called delusions of persecution. Patients of this kind complain constantly about their assumptive enemies, who have formed a conspiracy against them and who torture them in all possible ways. As soon as these patients enter the hospital they imagine they are being poisoned and tortured by the officers of the institution. If in addition to their delusions they suffer from hallucinations, they actually see and hear their enemies who maltreat and torture them. Their stories are sometimes so plausible that a layman will invariably believe them, not being able to recognize the fact that a person may talk quite coherently and still be insane.

"It is possible, of course, that in the attempt to restrain, feed, or clean a patient forcibly a nurse may act awkwardly and perhaps inflict an injury which a more skilful nurse would have avoided; but is that a case for the District Attorney? No more than a case of septic infection in a surgical ward. I want to assure people that their friends in the hospital are treated according to the most modern scientific principles: that everything that possibly can be done is being done for them, and that there prevails only one spirit in the Manhattan State Hospital, and that is the spirit of humanity."

PHILADELPHIA.

Methodist Hospital.—A bequest of $20,200 by John N. Doak provides for four free beds in the Methodist hospital.

Pasteur Institute Desired.—The officials of the Bureau of Health are strongly in favor of establishing here an institute for the treatment of rabies. The recent preventive treatment of two persons

through the kindness of the New York Health Department has led to the suggestion that a laboratory be founded in this city. Several deaths from hydrophobia have recently occurred.

Streets to Be Flushed.—To get rid of the great quantities of dust on the streets at the present time the street-cleaning contractors are hereafter to flush the streets daily from the fire plugs. In addition, Market and Chestnut streets are to be sprinkled every two hours, from 8 A.M. to 6 P.M. Chief Sutcliff refuses to entertain the idea that the dust spreads contagion and looks upon the new measures as only conducing to the comfort of the public.

Philadelphia Hospital Examinations.—The examination of candidates for resident physicians of the Philadelphia hospital was held May 10. Ninety-five applicants, among whom were three women, took the examination. The examining board consisted of Drs. John H. Gibbon, W. T. Longcope, and W. E. Hughes. Nineteen positions are to be filled.

New York Certificates to Be Credited.—As the result of a recent conference, it is announced that certificates of preliminary examination in New York will be given full credit by the Pennsylvania State Board of Medical Examiners. Some months ago this privilege was refused which caused great dissatisfaction among many medical students.

CHICAGO.

Donation of $75,000 to the Maurice Porter Hospital.—The Maurice Porter Hospital will be known in the future as the Children's Memorial Hospital. Mrs. Porter has given $75,000 toward a new building in memory of her son. This institution will be the nucleus of a new hospital where adequate provision for the care of the poor children of Chicago will be made.

Money for Augustana Hospital.—At the Illinois Conference, Augustana Lutheran Synod, the Board of Directors of Augustana Hospital, Chicago, was authorized to borrow $100,000, with which to erect an addition to the Hospital. Dr. M. Wahlstrom was elected Superintendent of the Hospital, and Dr. C. G. Folsom, of Galesburg, and Dr. Theodore Freeman, Chicago, were elected members of the Hospital Board.

Rents Old Training School.—The Board of Trustees of the Dearborn Medical College has leased the old Chicago Manual Training School Building, Twelfth Street and Michigan Avenue, together with the Pharmaceutical Department of the University of Illinois. Because of the removal of the school to its new quarters, the series of lectures to the police on first aid to the injured will be abandoned temporarily.

Music for the Insane.—Dr. V. H. Podstata, Superintendent of the Dunning Institutions, in a recent address stated that the salutary effects of music on the disordered mind are many and profound. "The first effect of pleasing, harmonious sounds is a relaxation of special nervous tension. The harmonious sound wave reduces the horrible inhibition and the mental agony of the melancholy patient. It liberates the pent up energy and diverts the association of ideas. In the maniac the constant flight of ideas and motor restlessness is moderated and often checked. In the purely deluded the attention is diverted so that at least temporary stay is achieved in the abnormal mental aberration constantly inclosing the poor mind in a deep network of delusions. The demented patient is stimulated and aroused to activity. In all cases the harmonious impressions cause a relaxation of circulation of blood. The congestion is relieved, also the anemia, and, as a result, not only the brain, but all the organs of the body are enabled to return to the normal activity. The stomach can now secrete sufficient quality and quantity of digestive ferments, and the elimination of poisonous waste products increases. As a further result, reconstruction may take place and the patient be given better chance for improvement. What, then, is the philosophy of the effect of music upon the brain? Surely no one can expect that the structural weakness of the brain, due to impediments in development from hereditary causes, will be corrected by a melodious harmony of sound. Neither can the sweetest music remove from the blood the alcoholic or other poisons causing a steady deterioration of all tissue, particularly the highly organized and sensitive associative nervous network in the brain.

The Evolution of the Modern Operation for Entropium of the Upper Lid.—Dr. F. C. Hotz read a paper on this subject before the Chicago Medical Society. In the normal lid the free margin stands perpendicularly on the eyeball and also forms with the eye lashes approximately a right angle, keeping the latter at the same distance from the globe in all the movements and positions of the lid. In entropium the lid margin inclines towards the eye and carries the cilia down with it so that they touch the globe and cause more or less irritation by friction. For the relief of this irritation the cilia must be turned away from the eye; three different schemes were employed: skin traction, changing the curvature of the cartilage, and the making of a new lid border. Along each of these lines the operations were gradually perfected and out of the combination of them evolved the modern entropium operation. The traction scheme is the oldest, it attempts to turn the inverted lid border straight by traction exerted upon it through the skin. A study of the operations based on this scheme shows the following course of evolution: (1) Traction through ligatures, which produced a hideous deformity of the lids. (2) Traction through shortening the skin, which handicapped the lid in its movements so that it could not be closed. (3) Traction through skin shortening combined with sliding the cilia upward on the tarsus, which had the same mutilating effect, and finally (4) traction by drawing the lid skin up and fastening it by sutures to the upper border of the tarsus. This method secures a constant and uniform tension without mutilating the lid. But traction alone is not effective enough in the higher degrees of entropium, especially if complicated by irregular growth of the cilia. To facilitate in such cases the upturning of the lid border the scheme of grooving the cartilage was introduced. One way was to make a transverse incision through conjunctiva and tarsus above the margin. This proved a complete failure because this transverse groove on the conjunctival side of the tarsus filled up with cicatricial tissue the contraction of which necessarily drew the lid border down again. The other way was rational and successful. It is Streatfield's operation of removing a transverse wedge-shaped piece from the cartilage, the base of the wedge being on the cutaneous side of the lid and the apex near the conjunctival surface. Therefore if the edges of this groove are brought together the lid border with the cilia is turned up. The scheme of turning up the cilia alone and supporting them by a new lid margin was first suggested by Spencer Watson in 1874. He slid the cilia up on the tarsus, like Arlt, but instead of holding them in their

new position by skin traction he supported them by a skin flap transplanted below. This method then passed through a number of modifications and finally developed into the simple but effective operation of splitting the lid border deeply, turning the cilia bearing edge up and filling the groove under the cilia in the margin with a slender Thiersch graft. If to this rebuilding of the margin is added the fixation of the lid skin to the upper border of the tarsus the operation yields perfect results. Thus evolution has led to two excellent methods; the combination of grooving the cartilage with skin traction from the upper border of the tarsus, and the combination of rebuilding the lid margin with skin traction from the upper border of the tarsus.

Radical Mastoid Operation for Chronic Purulent Otorrhea.—In a paper on this subject, Dr. Frank Allport pointed out the reasons for and objections to the radical mastoid operation for the permanent relief of chronic purulent otorrhea. The writer believed that the asking of a single question should place the necessity for the radical mastoid operation for the relief of chronic purulent otorrhea in its proper light. Why should ordinary rules of surgical expediency, which point to the removal of necrotic and dangerous tissue in other portions of the body, be more or less ignored in cases of intractable chronic purulent otorrhea? This question was emphasized by the fact that in almost all such cases the morbid changes were not confined to the middle ear space, but were continued back through the aditus ad antrum to the antrum, and usually into the mastoid cells. The dangers of the radical mastoid operation were such that, while they should not deter a competent and progressive surgeon from undertaking the work after the conviction for its necessity had been reached, the operation should not be performed without much study, experience and observation, and not until its urgency was conscientiously manifested. The chief objection to the radical mastoid operation was the production of facial paralysis (an accident which should seldom, if ever, occur after the operation for acute mastoid abscess), and this was a menace of no mean caliber, and one from which the average operator might well shrink. The facial nerve might be injured in any portion of its course during the operation, from its entrance into the middle ear at the upper, middle portion of the tympanic wall to its exit from the skull at the stylomastoid foramen. Another danger to be avoided during the radical mastoid operation is the infliction of an injury to the horizontal semicircular canal. The wounding of the sigmoid portion of the lateral sinus was undoubtedly one of the dangers of the radical mastoid operation, although the author believed that this danger had been very much overestimated both as to its probability and also as to the damage accomplished by such an accident. Another danger in the radical mastoid operation was the possibility of exposing the dural covering of the temporosphenoidal lobe or the cerebellar lobe of the brain, and this danger had been much overestimated. But little anxiety need be entertained even if such an accident should occur. While meningitis and other intracranial complications and accidents to the facial nerve, horizontal semicircular canal, sigmoid sinus, etc., may result from the performance of the radical mastoid operation, the only occurrence that seemed to the writer to sustain much weight was the embarrassing and unfortunate occurrence of facial paralysis. Another objection to the operation was the fact that the ultimate result was not always successful as to the cessation of the discharge. A fourth objection, which was frequently raised, was the possible bad effect upon hearing. Purulent tympanic infections were responsible for about one-half of the brain abscesses of the world, and that in the United States alone four thousand otitic brain abscesses occurred annually, which proportion was trebled in Germany; that chronic purulent otorrhea was responsible for most of these, and that death occurred in about one in every thousand cases of ear disease of all kinds that came under treatment. Hundreds of cases of chronic purulent otorrhea presented themselves to physicians to be cured. Shall physicians be satisfied with eternally, month after month, and year after year, cleansing, drying, powdering, scraping these middle ears, when they must know that the real seat of the disease could never be even touched except by the radical operation?

GENERAL.

Ruling in Favor of Oxalic Acid.—Attorney-General Cunneen has decided that while grocers may not sell paregoric and witch hazel under the pharmacy law, they may sell oxalic acid. In an opinion addressed to George W. Ryan, president of the Buffalo Retail Grocers' Association, the Attorney-General says: "Oxalic acid is largely used in calico printing, dyeing, and the bleaching of flax and straw. I do not know of any use to which paregoric and witch hazel are put to other than in the field of medicine. I am of the opinion that paregoric and witch hazel may not lawfully be sold by grocers and that oxalic acid, although a dangerous poison, may lawfully be sold by grocers for use in the arts, but not for any other purpose. Oxalic acid, when at all sold, must, of course, bear the poison label as required by Section 198 of the statute.

We may henceforth reasonably expect a decline in the use of carbolic acid as a self-destroyer in favor of its powerful ally so easily procurable under the above conditions.

Physical Training and Heredity.—A very interesting if not entirely satisfactory set of conclusions have been arrived at through the excogitations of M. Tissié, physical director in the Bordeaux Academy in Paris. M. Tissié believes that the maintenance of a fair degree of health depends upon the proper distribution of bodily energy between body and brain, and that overwork of either results in mental or physical fatigue. In his estimation no training that suppresses appetite, increases thirst, or disturbs sleep can be beneficial in the slightest degree. Excessive exercise means a foundation for a "double personality" and leads to "hysteria." On the psychological side general bodily movements of extension mean pleasure; while those of flexion tend toward grief. Furthermore it is possible to transmit the good or bad results of physical training to offspring and then to directly influence the well-being of a future race. On this point very special stress is laid. An attempt is made to classify various organs in the body according to their importance; viz., (1) brain, (2) lungs, (3) heart, (4) stomach, (5) splanchnic organs and glands, (6) muscles.

It is unfortunate that the gentleman in question has left so little proof either direct or indirect in support of his assertions, and it is always dangerous to theorize when there is a possibility that some one with a little more scientific acumen may obtain facts which shall disprove one's most carefully treasured bubbles. There seems to have been plausibility enough in the present instance, however, to merit the attention of reputable scientific journals, chief of which is the *Revue Scientifique*. In criticising M. Tissié's statements, this journal concurs in the idea that there is probably a potential general nerve force which can become physical or psychical according to the demands of the individual at any particular moment. Whether this force shall be

liberated as muscular energy, for example, or as its psychical equivalent, depends upon the constitution of the individual and upon his requirements. For instance, if the "valve of cerebration" is hard to open we have the hard-handed laborer or the athlete; if this so-called valve be easy to open we have the esthete.

This view is not likely to become popular in America, especially among our college athletes who object most decidedly to disparaging remarks concerning their mental capacity and who are quite anxious to prove the existence of an opposite state of affairs. Their view is reasonable enough, too, when one considers how excessively fatiguing a hard game of football is, and how very few heroes of the gridiron develop anything like the double personality or hysteria described by M. Tissié. As for the transmission of physical characteristics through heredity the fact seems pretty well established already and there is little more to be done about it save the collocation of well-marked and distinctively interesting cases as they may arise.

As illustrating the danger from mental overwork and consequent nervous breakdown, the *Revue* thinks that "the nervous are poisoned under the influence of overwork resulting in cerebral lameness," analogous to physical lameness from a like condition in the muscles. This may be a likely explanation, it certainly has the quality of being novel; but so far as the reporter's own experience goes most cerebral lameness seems to be of the congenital type and quite incurable by any manner of elaborate "exercise," fatiguing or otherwise.

The *Revue* thinks that the medical profession should take a more vital interest in these matters because its "ideas on these subjects are essentially rudimentary, since there are no courses of physical training in medical schools." It seems likely that if all the subjects one ought really to know come to be taught in medical schools, human life will have to be lengthened considerably beyond the Biblical three score and ten mark. One ought to be glad that he was graduated before he became fully aware of his reprehensible unfitness.

OBITUARY.

Dr. Clinton Cushing, one of the oldest and best-known physicians of Washington, D. C., died suddenly at his home on May 10. Dr. Cushing retired from practice some years ago.

Dr. William Waterworth, for twenty-two years a resident of Brooklyn, N. Y., where he was a practising physician, died May 11. He was born in Salem, Ohio, in 1851, was graduated from Adelbert College, and in 1878 from the Bellevue Medical College. He was a member of the Union League Club of Brooklyn, of the Royal Arcanum, and of several medical societies.

Dr. William H. McGee, a leading physician of Warren County, N. J., died May 11, aged fifty-six years. He was a member of the Warren County Medical Society and resident physician of the Pennsylvania Railroad Company.

CORRESPONDENCE.

CARCINOMA OF THE STOMACH.

To the Editor of the Medical News.

Dear Sir: I desire to draw attention to a clinical sign which has proven the means of putting me on the right track in cases which further examinations have proven to be gastric carcinomata. I refer to the stomach transparency which can readily be seen with the fluoroscope in many of these cases without previous distention of that organ with gas. In a healthy stomach the walls contract on the contents, but in cases of carcinoma they very early seem to lose this physiological power of responding to the presence of food and the fundal area remains continuously dilated and distended, even though there be no displacement downward of the lower gastric border and even though a glass or two of water be given to these patients to drink. The same fact can be to some extent brought out by percussion, but not so well, as the pulmonary emphysema, nearly always present in these cases, makes it difficult.

C. M. Cooper, M.B., M.R.C.S.

San Francisco, Cal., April 26.

POISONING BY EGG.

To the Editor of the Medical News:

Dear Sir: Apropos of Dr. Clemens' interesting instance of Poisoning from the White of Egg published in the Medical News of April 16, 1904, I beg to report a somewhat similar idiosyncrasy in a child, now three and a half years old, who has been under my care since birth; with the difference, however, that in my patient it appeared to be the yolk, and not the white, of egg which caused the untoward symptoms. The idiosyncrasy was first noticed when, at the age of twelve months, the raw yolk of egg was added to the infant's bottle of milk; this was followed in about two hours with great pallor and severe vomiting and prostration, twenty-four hours elapsing before the child had regained its usual health. A few weeks later a similar train of symptoms followed the admixture of a whole raw egg with the food. The raw white of egg alone was then added to the bottle, but was not followed by any disturbance. This peculiarity continued throughout the whole of the second and third year, the administration of whole egg or egg yolk, whether raw or cooked, always producing the symptoms described above. Lately, since the child has attained its third year, it is being educated to eat egg yolk, by giving it minute quantities of food containing the yolk, such as custards and farinaceous puddings, and so far no disturbance has followed.

The symptoms in my patient cannot be explained by gastric irritation alone, induced, for instance, by the large quantity of fat present in the yolk of egg; the symptoms were on each occasion of distinctly toxic character, the prostration being marked and prolonged, while some of the attacks were attended with fever. Nor could they have been due to decomposition changes; they followed whether State, city eggs or fresh country ones were eaten.

Idiosyncrasy as regards eggs is not uncommon. People constantly assert that eggs make them bilious. Sometimes this is imaginary, but in many cases the inability actually exists. Jonathan Hutchinson in his work, "The Pedigree of Disease (London, 1884), relates several cases of this nature, in some of which the symptoms were so violent as to excite suspicion that poison had been given. In the *British Medicol Journal* for March 11, 1899, there is the report of a case in which the very smallest quantity of egg caused the most violent symptoms, resembling those of an irritant poison; in this patient a small portion of white of egg placed on the skin was followed by an abundant urticarial eruption. Robert Hutchinson (Food and Diebetics, London, 1901), in speaking of idiosyncrasy in respect to eggs, says that the digestive juices of some persons apparently act in such a way as to produce poison when eggs are introduced into the stomach. In many cases it has seemed to the writer that the trouble lay in the yolk, possibly because of its large fat content. On the other hand, especially in the cooked egg, the white is undoubtedly the offending element; indeed, this would seem to be the case in the majority of instances—more, however, when

given in combination with the yolk than when eaten alone. Robert Hutchinson points out that the sulphur of the egg is contained almost entirely in the white, and that when eggs rot, and, in some cases during digestion, alkaline sulphides are developed, and these being acted upon by phosphoric acid produced from the yolk, sulphureted hydrogen is liberated, to which the symptoms may in some cases be due. However this may be, it is significant that eggs and fish, the two dietary articles with which individual susceptibility is most frequently associated, are the very ones most susceptible to changes from overkeeping.

Some of the instances of egg-poisoning are undoubtedly due to the changes in the eggs themselves; but others can only be explained by the term idiosyncrasy—a word, which according to J. Hutchinson, is intended to denote one ignorance of causes, though in no degree to express disbelief in their existence. I am, sir,

Very respectfully yours,

Philadelphia, April 27. D. J. Milton Miller, M.D.

SOCIETY PROCEEDINGS.

ASSOCIATION OF AMERICAN PHYSICIANS.

Nineteenth Annual Meeting, held at Washington, D. C., May 10 and 11, 1904.

(Continued from Page 955.)

Second Day—May 11th (*continued*).

Eosinophiles and Bacterial Infection.—Dr. F. L. Opie, of Johns Hopkins, Baltimore, described some recent observations on eosinsphile cells, made with the purpose of determining the relation of these cells to bacterial infection and bodily resistance to bacterial invasion. Various observations in this line have been made but they are not all in accord. Observers saw the granulations streaming toward the part of the eosinophile cell that happened to be in contact with a bacterium and then disappear as if in their dissolution some protective purpose was involved; other observers did not confirm these observations, however. Ehrlich found in his investigations of cells that shortly after infection the polynuclear leucocytes were increased and that, apparently at least, the eosinophiles were reduced in number. This observation has been amply confirmed and it is now generally conceded that in fevers the eosinophiles are decreased in number.

Bacterial versus Animal Parasitic Infections.—While in bacterial infections this reduction of the eosinophiles always occurs with animal parasites, as the *Trichina* and most of the intestinal parasites there is an increase of eosinophiles. This is true also in diseases such as smallpox and scarlet fever, in which the presence of an animal parasite as the causative factor is suspected and in malaria, where this type of parasite is known to be the cause. This difference in all reaction promises to be of diagnostic significance for obscure forms of disease due to animal parasites.

Study of Eosinophiles.—Guinea-pigs have normally 5 to 6 per cent. of eosinophiles, so that the study of these formed elements in them is comparatively easy. Chronic infections, as tuberculosis were found to bring a decrease in the number of eosinophiles. This was true also for such infections as would ordinarily cause the death of the animals in about a week. No eosinophiles were to be seen in the circulation when the fatal termination was approaching in these diseases. They had disappeared also from the tissues. In acute infections the disappearance was much more rapid. In severe infections a few hours sufficed to bring about the disappearance of these cells. The *Bacillus pyocyaneus* caused their disappearance in about twenty-four hours. As a rule, guinea-pigs recover from this type of infection and the diminution of eosinophiles is found to correspond with an increase in the polynuclear cells. On the second and third day the eosinophiles reappeared then gradually increased beyond their original number.

Fate of the Eosinophiles.—The eosinophile cells have disappeared from the peripheral circulation but they can be found accumulated near the point of infection. When the infection is in the peritoneal cavity where the pathological picture can be studied so well, the eosinophiles are found in immense numbers in the veins of the omentum and mesentery and also escaping from these into the surrounding tissues. This process of adhesion to the walls of the veins and migration can be seen within an hour after an acute infection. The eosinophiles do not seem to act as phagocytes, though certain other cells, *e.g.*, the large mononuclear cells which accompany the eosinophiles do. These latter are the macrophages of Metschnikoff.

Life History of Eosinophiles.—The life history of some of the large eosinophiles is extremely interesting. They seem to originate in the bone-marrow, and are carried thence in the circulation to the spleen where for a time they are harbored in the reticular spaces. Here they seem to find favorable circumstances for their multiplication and the occurrence of this process might easily give rise to the thought that they originated here. It is from here that they eventually find their way into the system for the exercise of their normal physiological functions.

Conclusions as to Eosinophile Life.—Dr. Opie considers that it must be concluded that eosinophiles respond to chemotaxis and find their way immediately to the neighborhood of an infected focus. Here they but rarely act as phagocytes, but they play some other rôle in the mechanism of protection, or at least attempted reaction against bacterial invasion.

In reply to a question, Dr. Opie, in closing the discussion, said that at first bacteria cause a decrease but subsequently an increase of eosinophiles while animal parasites cause an increase from the very beginning of their habitation within the organism. This phenomenon is strikingly diverse, yet there is in the end a similarity that points probably to more or less identity of action and reaction.

Chloroma with Leucemia.—Dr. George Dock, of Ann Arbor, Mich., reported a new case of the rare disease chloroma, that is, the occurrence of greenish tumors at the same time with a leucemic condition of the blood and presented a study of all the cases of the disease that have been reported since 1893. Formerly this affection was considered to be some sort of pernicious anemia. Later it was thought to be a form of leucemia complicated by a tendency to the formation of malignant tumors. The tumors were generally considered to be sarcomatous. Usually a decided weakness is one of the first symptoms of the disease and this is followed by the development of exophthalmos and the occurrence of tumors in the temporal regions with symptoms of their presence within the skull and also along certain of the bones. Dr. Dock's case began at the age of forty-five years, without any known cause, and weakness was such a prominent feature very early in the affection that the patient stayed in bed almost from the very beginning.

Symptoms.—None of the external lymph glands were enlarged, though there was a very marked leucemia. While preparations were being made for more detailed study of the blood itself and of the secretions, especially the urine, the patient unexpectedly succumbed to the disease. At the autopsy a number of

green tumors were found lying along the front of the vertebræ, just behind the sternum at the origins of the muscles and in most of the internal organs, especially the liver, kidneys and lungs. This very general invasion shows that the disease must have been at work some time before the first symptoms declared themselves, or at least before the patient would submit to thinking himself ill. The consequence was the unexpected death.

Blood Peculiarities.—The blood contained very few large nucleated red cells and in general, the red cells were affected only as in severe secondary anemia. Eighty per cent. of the white cells, however, were different from any ordinary blood cells and resembled bone marrow cells. A much greater proportion than normal of the white cells were eosinophiles. Some basophiles were seen but only just before death occurred. Unfortunately no autopsy of the head was allowed, so that it was not sure whether any tumors were present there, though there were no clinical symptoms pointing to this. The long bones also could not be examined and it is in these particularly that many interesting features of chloroma are discovered.

Comparative Frequency of Chloroma.—So far in the literature there are over a score of cases of chloroma, but observations on this type of disease have multiplied rapidly since special attention was called to it in very recent years. Within the last year at least six cases of chloroma have been seen. It seems not unlikely that in the next few years it will be found that chloroma is by no means a rare disease and at the present moment it would seem that clinicians generally should look for it. In all the cases in which complete autopsies have so far been made, greenish tumors have been found at the base of the skull. These are particularly likely to be present in the temporal fossæ. Occasionally the disease is recognized during life, because of tumors growing in the orbit and causing exophthalmos, these tumors also growing into the eyelids and showing distinctly green beneath the conjunctiva.

Tumor Coloration.—Dr. Byron Bramwell said that he reported a case in which the tumors when first seen were of a distinct, somewhat dark slate color. The shade being what would be called cyanotic. Later a distinct greenness developed not unlike that which is seen when, as a bruise is getting well the original black and blue change to green. Many shades of green, however, are seen, from a light sage green, such as occurred in Dr. Dock's last patient to a darker, yet bright green. Often these tumors are found before the condition of the blood is recognized. In one case the removal of the jaw for what was thought to be a sarcoma showed the presence of a greenish tumor, which had also invaded the skull and had many of the symptoms of malignancy. No chemical or biological explanation of the color has so far been found. Recklinghausen's suggestion that it is of parenchymatous origin somewhat as green pus (not that due to any of the actively coloring bacilli) is generally considered to be the only available explanation as yet. Certain of the clots found in the heart in leucemia have a greenish tinge but the heart clots are usually less green than are these tumors.

Blood Picture.—The blood picture must remain the most characteristic feature of the disease. It is that of a lymphatic leucemia but with some specific differences. Usually there is an enormous number of eosinophiles. There is nearly always an increase in the number of neutrophiles. Large lymphocytes are found in large numbers but some lymphocytes are also seen. In general it may be considered a more malignant type of leucemia. When there is an increase in the number of eosinophiles in leucemia, then the patient must be carefully looked over for the presence of any tumor formations and any hint of a greenish appearance.

Dr. Osler said, in discussing Dr. Dock's paper, that it may be well to try and get at the clinical picture of the disease, in order that clinicians may be ready to have suspicions aroused with regard to it, for it is evident that the affection is much more frequent than the number of cases so far reported might lead us to think. The leucemic condition would naturally last for a considerable period. When it is accompanied by great weakness, this should always be a suspicious sign.

Similarity to Scorbutic Leucemia.—Dr. Dock, in closing the discussion, said that not all the cases of chloroma reported have run so severe a course as his own. As a rule, indeed, they have had a very close similarity to leucemia, due to digestive disturbances, the so-called scorbutic leucemia, and it would seem impossible that in some cases at least that the absorption from the digestive tract may be the principal factor in the etiology. In answer to a question with regard to the long bones he said that in many cases they are affected, but the only way to determine this is by actual examination. In all blood diseases it would be advisable to examine the long bones, but unfortunately this is impossible, owing to social prejudice. In one case of chloroma where all the bones were examined, some greenish tumors were found in one femur, but not in the other. In answer to another question, Dr. Dock said that it seems not unlikely that a certain number of cases of chloroma have been reported as myeloma, that is tumors of the blood-making bone-marrow. Chloroma evidently gives the definite hint that there are several varieties of leucemia, which will have to be separated clinically, as well as by laboratory investigation, before this disease can be properly understood.

Types of Splenic Anemia or Splenomegaly.—Dr. Alfred Stengel, of Philadelphia, reported cases of enlargement of the spleen with some disturbance of the blood picture. The first case was that of a child three years of age with a rickety look but with very enlarged abdomen due to the presence of the large spleen. The patient succumbed to a complication and at the autopsy some miliary tubercles were found besides the very large spleen. In the second case an Italian suffering from a large spleen, which was thought to be malarial at first (he denied syphilitic infection) and there seemed to be no question of tuberculosis. He had a history, however, that pointed to the existence of the enlarged spleen for a long time and he was very much stunted in growth, with peculiar knobbing of the fingers and in general some serious disturbance of nutrition. In the third case a negress suffering from considerable discomfort because of the presence of enlarged spleen and splenic anemic as a complication had a history in which there was no malaria, though she came from a malarial district in the South and denied syphilitic infection. Her last two children, however, had been stillborn. Her condition became so severe that splenectomy was advised and there was at first some disturbance of the blood and later an absolute return to normal, which has been retained. The removed spleen showed a series of umbilicated more or less cicatricial pits but was very solid and was evidently invaded by some neoplastic formations. Under the microscope the picture presented was that of a large proliferation of the endothelial elements of the blood vessels of the spleen, giving the very characteristic appearance of primitive endothelioma of the

spleen. No tubercle bacilli could be found, no bacteria could be discovered by Gram's method. There were no signs of sporozoa and no necrosis of tissue in any part. The question whether it might not be syphilis must remain, though Dr. Stengel is of the opinion that it was not syphilitic. At the time of the operation it was noted that the liver was also wrinkled and had something of the dimpled appearance presented by the skin.

Lack of Vital Resistance.—This case exhibited a peculiar and very striking lack of vital resistance to infectious disease. She has suffered from parotitis several times, from pneumonia twice, from bronchitis and from other infections. There is always a low leucocytosis. This may indicate that disturbances of splenic activity are important factors in the production of the resistance to bacterial invasion, which is considerably more important than the virulence of bacteria themselves in the production of disease.

Complexity of Splenic Anemia.—Dr. Osler said that it must be clear to every clinician now that there is an extreme complexity of the subject of splenic anemia and that under the term are included a number of varying conditions. Some of these have a marked similarity to one another, but with distinctive features. Some of them are widely separated. The cases associated with nutritional changes, such as infantilism and clubbing of the fingers constitute one extreme. Dr. Osler has had under observation in recent years nine cases of large spleen. In one of these there was no other manifestation present except the physical discomfort of carrying around the enlarged organ. In four cases there was chronic splenic anemia with a reduction of the number of leucocytes, what would be called a moderate leucemia. Two cases were associated with liver symptoms and these need careful study and recognition as early as possible in order to use whatever prophylaxis is possible. These cases probably, bear some relation to Hanot's cirrhosis of the liver and deserve special investigation. There are evidently family forms of splenic enlargement, such as the type studied by Brill, in New York, in which an enlarged spleen could be traced in four generations. Dr. Osler is of the opinion that surgery can accomplish more for enlarged spleens than has been thought. When it is a source of discomfort the enlarged organ should be removed before it has contracted adhesions, or has seriously disturbed the patient's blood equilibrium.

Surgical Intervention.—Dr. George Dock said that it seems advisable to refer cases of enlarged spleen more frequently to the surgeon than is at present the custom. Whenever the hemic processes are negative then operation is indicated. Besides the relief of the patient's discomfort there is a decided advantage as regards our knowledge of the disease. If the spleen is allowed to remain, patients may live for years and other changes take place in the organ so that the autopsy gives a complicated picture and not the true idea of the condition in the spleen as it originally existed.

Movable Spleens.—Dr. B. W. Sippy, of Chicago, said that movable spleen, in women particularly, has in his experience been associated with gradual anemia. In one of these cases seen recently this anemia had reached the extent of two and a half million red blood corpuscles and forty per cent. of hemoglobin. There was a moderate poikilocytosis but there were no nucleated reds present. The spleen was removed and while there was a slight unfavorable reaction afterward, the anemia had decreased since and the patient has continued to be well. The enlarged organ showed only ordinary splenic hyperplasia with some endothelial overgrowth but not enough to stamp the process as true neoplasm and there was no involvement of the liver or lymph glands. The woman had not been a hearty eater for some time and it was possible of course that her lowered nutrition for this reason might have been the cause of her anemia. With regard to Dr. Sippy's presumption of the possibility of lack of nourishment causing anemia, Dr. Cabot, of Boston, said that there is no evidence at all of malnutrition ever causing anything like a true anemia. Lack of food affects other organs but not the blood-making organs apparently. The general statement then that undernutrition may play a rôle in these cases is always an undesirable one.

Philippine Anemia.—Dr. Osler said that among the cases of anemia that will be seen in soldiers who have recently returned from the Philippines there will probably be some cases in which the causative factor will prove to be the Donovan-Leischmann bodies. Many of these cases may be grouped under the heading of malarial anemia when this is really not the case. It is not difficult now to find faithful descriptions of the appearance of the Donovan-Leischmann bodies and there are even a number of specimens of them in the hands of the Marine Hospital Service. Physicians should not lose the opportunity then of getting at the true cause of these types of anemia and perhaps adding to our knowledge of the life cycle of this peculiar parasite.

Dr. Stengel, in closing the discussion, said that splenic enlargement is by no means necessarily associated with a serious pathological condition. It is perfectly compatible with ordinary good health. Cases that come present very different features and at one clinical lesson, not long since, he presented three cases with regard to which the conclusions as to treatment and prognosis were very different.

Cultivation of Trypanosomes.—That Frederick G. Novy, of Ann Arbor, Mich., said that most of the modern progress in bacteriology is due to the cultural methods for the growth of bacteria introduced by Koch. With regard to the more recent pathological organisms which have been brought to attention it seemed very desirable to find a culture medium or a series of culture media. In this country there is a trypanosome which affects rats quite commonly, which, after a series of observations, Dr. Novy has been able to make grow on a combination of agar and fibrinated blood. This does not grow directly on the medium itself but in the water of condensation or in the fluid material which is squeezed out of the agar blood serum mixture during the process of drying. He has now had some organisms which have in this way passed through thirty generations and after transplantation every month have remained alive for two years. These trypanosomes grow very well at ordinary temperatures. They grow faster in an incubator, but die out more rapidly at the higher temperature and have to be transplanted every week.

Living Culture Material.—While waiting to obtain fresh trypanosomes, Dr. Novy has employed inoculation into certain of the small animals as a method of keeping specimens sent him alive. The South African trypanosome may be grown upon the mouse.

The Lewis organism of this type may be grown on ordinary culture media and luxuriates almost as does the *Pneumococcus*. It has been kept alive for eighteen days in a test tube. Once Dr. Novy thought that he had succeeded in making the Bruce trypanosome to grow in this same way, but it proved eventually to be an ordinary rat trypanosome which had grown. These observations serve to show that these microorganisms are not, as has been thought, all of the same type but are very distinct.

Attenuated Protozoa.—Dr. Novy has found that these protozoa when grown at the room temperature may be quite virulent, even after passing through many generations in a test tube. If the test tubes, however, are kept at the temperature of 34° C. for two days while the microorganisms are quite active and reproduce very luxuriantly, being apparently perfectly healthy, yet they will produce no pathological effect. This is the first time that an attenuated form of protozoon has been found. With this modified organism an attempt was made to secure the protective vaccination of rats, but the animals proved too susceptible. Better success has been secured in this line with guinea-pigs and one of these animals has twice survived doses of trypanosome culture which killed the control animals in each case.

Different Forms of Trypanosomes.—The most important feature of present-day development of knowledge of trypanosomes is the conviction of the existence of a number of different forms. At first they were all thought to be the same. Laveran and Mesnil, however, showed quite distinctly that they were different organisms. This complicates the problem of disease but explains many anomalies that would otherwise be hard to understand and opens up a wide field for observation.

Survival of Philippine Trypanosomes.—Recently a medical man from Dr. Novy's laboratory went to the Philippines and under Dr. Novy's directions tried to send him specimen of the trypanosome which causes the surra disease. Ordinarily the blood of animals affected by surra loses its virulence, that is, all its power to reproduce the disease in about five days. Some of the blood is introduced into properly prepared test tubes, however, and after several trials a few of the tubes were found swarming with trypanosomes on their arrival. It took thirty-eight days for the journey, so that the problem of a culture method for this form of organism seems certain to be found. In these tubes one peculiarity was the existence of certain minute forms of protozoa which were at first considered to be so small as probably to lack virulence entirely.

Organisms That Passed Filters.—When an attempt was made to filter the smaller forms of organisms out of cultures the result seemed to be successful as far as the microscope was concerned, but when the filtrate was used for inoculation purposes, animals developed the disease. It seems clear then that very minute forms of the trypanosome, such as passed through Berkefeld filter, may still be capable of producing disease. Variations in morphology form one of the most interesting features of this new class of organisms. In the cycles of existence there seems to be a process of conjugation and then the organism may under certain circumstances divide into a large number of small trypanosomes. Some of these are really flagellate in character and this would seem to place them among the flagellate forms. This morphological peculiarity can perhaps best be understood by the realization of the fact that the spirillum of Obermeier, the well-known cause of intermittent fever, might very well be allied among these organisms under this form. It seems not unlikely therefore that these studies in the morphology of the peculiar protozoa, which the invasion of the tropics by the white man in recent years have brought more especially to attention, may well prove a source of suggestive information with regard to other causes of disease which are apparently better known, yet with regard to which our present knowledge is meager enough.

Zonal Necrosis of the Liver.—Dr. E. L. Opie, of Baltimore, read a paper on the peculiar distribution of various types of necrosis in the liver. The lesion is apt to be confined to certain zones leaving other parts untouched in such a way as to produce quite a striking pathological picture. There are three distinct zones of necrosis that he has had under observation, the peripheral on the outermost confines of the lobule, the central immediately around the central vessel and the intermediate, between these two areas. The intermediate is apt to be in connection with central necrosis more frequently than with peripheral and it is not unusual to find the whole lobule necrosed except for a thin peripheral boundary area where no trace of necrosis is present. These forms of necrosis mark out different parts in the lobule for special functions and it is the accomplishment of this function when toxic substances are present or bacterial invasion occurs that is the active cause of the necrosis.

Acute Yellow Atrophy.—Dr. Opie's studies seem to have shown him that necrosis in the intermediate zone of the liver lobule bears a special relation to acute yellow atrophy. In twelve instances of central necrosis, the lesion seemed to be associated with disturbances of the circulation complicated by infection. Median zone necrosis was associated with pregnancy and this lesion has been described by others as occurring in eclampsia. Out of five hundred autopsies this intermediate zone of the liver lobule was affected nine times. The source seemed to be ulcerative lesions somewhere in the digestive tract and severe digestive disturbances usually accompanied by infectious processes in the gastro-intestinal mucous membrane. In some cases of central and intermediate zone necrosis, where the outer narrow peripheral margin of the lobule was spared, the beginning of the lesion seems to have been in the intermediate zone. In the one case observed in which necrosis of the intermediate zone of the liver was not associated with eclampsia the patient had suffered from the pernicious vomiting of pregnancy. The beginning changes found in this case as well as in the others mentioned bore a resemblance to those which have been described at the beginning of acute yellow atrophy or icterus gravis, as it is sometimes called. It has been known for some time that while these cases are characterized by jaundice and delirium the liver is not always found atrophied. Liebermeister said that on the contrary if the patient dies before the ninth day of the disease enlargement is always found. If the affection continues after this and proves fatal the characteristic atrophy described by Rokitansky will be found. The essential feature is a necrosis with fatty degeneration.

Liver Infections.—In a certain number of cases the typhoid bacillus has been found in livers suffering from acute necrotic conditions. In others the streptococcus has been found. As might readily be expected, in these cases a fatal issue has occurred before the stage of acute yellow atrophy had time to occur. It would seem, however, that this condition is always due to infectious material absorbed from the digestive tract, usually from ulcerative lesions of the digestive tract, producing serious effects in the intermediate and central zones of the liver lobule. Marchand has suggested that regenerative changes in the liver take place either from the center or the periphery; where the infection that causes the tendency to necrosis is not very severe, such regeneration may save the patient.

Malignant Adenoma of the Liver.—Dr. George L. Peabody, of New York, presented the specimens from a case of malignant adenoma of the liver. The patient was a Greek, thirty-eight years of age, who denied syphilis and alcoholism. Two weeks before his admission to the Presbyterian Hospital he began to suffer

acutely from ascites. The symptoms were a sense of weight and a difficulty of respiration. Shortly after his admission to the hospital he was tapped and 7½ liters of fluid were removed from his abdominal cavity. This fluid was a bloody serum so hemorrhagic in character as to look like slightly diluted blood, rather than blood-colored serum. A smear looked like blood. The patient was relieved very much but his ascites recurred again after a few days and he had to be tapped once more. Before the tapping the liver and spleen could not be made out by palpation because of the tension of the abdominal walls due to the fluid. On percussion both the organs seemed to be smaller than normal. After the removal of the fluid neither the spleen nor the liver could be felt, but there was no doubt that both were very much decreased in size. After several tappings the man gradually succumbed with some of the symptoms of cachexia and it was concluded that he was suffering from malignant disease.

Autopsy Findings.—At the autopsy an irregular mass was found projecting on the upper surface of the small hard liver. The lymph glands in the upper part of the peritoneal cavity, in the mesentery and also some of the bronchial glands were found enlarged. There was thrombosis of the large veins of the liver itself and of the spleen. The liver was very much reduced in size and was covered by a number of cicatricial-like puckerings that inevitably suggested syphilis. The liver was irregular from contraction, but also because of the presence of a new growth irregularly infiltrating its tissues. This was of the so-called tubular or trabecular variety, such as is sometimes called adenoma. It consisted of modified liver cells, the larger ones containing two or more nuclei. There were no metastatic growths to be found anywhere, though some of the vessels of the liver were filled with tumor masses.

Usual Occurrence in and Course.—Liver adenoma usually occurs in connection with cirrhosis and is not often seen except in men. In them it is commonest about the age of forty years, rarely in patients beyond that age. It seldom takes more than a few months to bring about a fatal termination. One of the most prominent symptoms is ascites, which reaches a large amount. This fluid is nearly always discolored with blood because there is usually a leakage from some of the vessels of the tumor. In this case it is not difficult to see on the specimen whence the blood came which caused the hemorrhagic serum to have such a bloody tinge. Jaundice is another very common symptom in these cases, though not always present. When a large ascites develops rapidly and the tapping shows the presence of considerable blood, suspicion must always be aroused as to the malignant character of the affection. The clinical picture, however, is in general not unlike that presented by secondary carcinoma.

The Adrenal in Addison's Disease.—Dr. Charles F. Withington, of Boston, discussed the reported cases of Addison's disease and their relation to adrenal tuberculosis. While tuberculosis of these glands is the most common cause of Addison's disease, it is by no means the only one and a number of cases have been noted without any adrenal tuberculosis. In the non-tuberculous cases the lesions found were atrophy of the adrenal glands, interstitial inflammation, cancer, occlusion of the veins of, or hemorrhage into the adrenal structure. In a certain number of cases no disease of the adrenals was found at all. In some of these a lesion of the semilunar ganglion was found. In some others this lesion was not present. In a certain number of cases a pigmentation resembling that of Addison's disease was observed but without any proper warrant for considering the disease Addison's disease.

Atrophy of Adrenals.—In one case reported there was a curious pigmentation that occurred on the backs of the hands and in the axillæ and very markedly in the pits of smallpox on the face. The pigment was dark bronze in color. No pathological lesion of the adrenals was found but there was very distinct atrophy of both these glands. In a certain number of cases of Addison's disease reported the adrenal glands have been found to be very small or one of them has been missing and the other not especially large, but in these cases the possibility must always be remembered of there being adrenal tissue elsewhere to make up for the apparently absent adrenals. Adrenal elements in the kidneys or in other organs or in structures in the neighborhood of the adrenals is not at all unusual and these strayed elements sometimes become the basis for very serious and fatal malignant tumors.

Function of Adrenal.—It is now generally conceded that the symptoms of Addison's disease are due to loss of function on the part of the adrenal glands. The substance which enters the blood from the adrenals and which is necessary for the preservation of the tone of muscles and especially of the muscular coats of the blood vessels is considered to be a secretion rather than an excretion. Something is added to the blood not something taken from it during its course through the adrenal glands. There is no doubt now that adrenal secretions have an influence over even voluntary muscles and this accounts for the marked weakness which is so often seen early in the disease before the affection would seem to have spread far enough to justify the languor which comes over the patient.

Experimental Arthritis and Endocarditis.—Dr. Morris Lewis, of Philadelphia, read a paper describing some recent experimental observations in the production of arthritis complicated by endocarditis in animals by the injection of a culture of a special form of streptococcus. This streptococcus had been found in a case of severe chorea which developed after an attack of acute rheumatic arthritis in a girl. The girl had complained first of pain and a swelling of the ankles and the disease being recognized as acute rheumatism, she was put to bed where she rapidly improved under the salicylate treatment. After a time, however, she became languid and was treated with quinine without success. Then she began to develop choreic movements which finally became so severe that she could not swallow except with difficulty and the sides of the bed had to be padded. When brought to the Infirmary for Nervous Diseases in Philadelphia she was very limp from her journey but still had some choreic movements. When she recovered from her fatigue her choreic movements became more marked and after several days endocarditis developed. This ran a rapid course. Cultures were taken from the median basilic vein as it proved only twelve hours before her death. In this blood, taken with all due aseptic precautions, a streptococcus was found. Cultures of this microorganism, when introduced intravenously into animals always give rise to arthritis which developed after an incubation period of from four to nine days. The animals would not move for some time before swelling could be noticed and it was evident that they were suffering somewhat in their joints, even before marked signs of arthritis developed.

Complicating Endocarditis.—In several of the animals an affection of the heart occurred which was of vegetative character. In nearly all the cases there was a spread of the arthritis from one joint to another after the first symptoms of the affection had developed. The streptococcus found in the blood culture could be isolated from all the affected joints of the animals. In

one of the rabbits it was also found in the vegetations on the heart valves. This streptococcus could not be distinguished morphologically or by any of the ordinary culture methods from the streptococcus which is commonly studied in the bacteriological laboratories. It seems to Dr. Lewis that the organism thus found is the same as has been described by certain observers in Germany and by certain English authorities in the bacteriology of rheumatism. It would seem to fulfil all the requisites demanded of a specific microorganism. It is found in the blood of a person suffering from the disease; it can be isolated in pure culture; it can be injected into animals and reproduce the characteristic symptoms of the original disease and then, finally, and most important, can be isolated in its original form from the affected tissues of the animals experimentally inoculated.

NEW YORK NEUROLOGICAL SOCIETY.

Regular Meeting, March 1, 1904.

The President, Pearce Bailey, M.D., in the Chair.

A Case of Facial Hemiatrophy.—Dr. Pierce Clark, who presented this paper, said he was indebted to Dr. McEntee for the history of this case, and to Dr. Holding for the X-ray pictures. The details of the case were as follows: The patient was a man, sixty-two years old, married, and the father of two children. His occupation was that of a clerk. His family history was negative. The patient himself had never had any serious illness. As a boy of five or six years, he received a slight burn on the right side of the face, which, however, left no scar, and the occurrence of which slipped his memory during the first two or three examinations. Eighteen years ago, at the age of forty-four years, the patient noticed a slight muscular contraction in the right side of the neck under the jaw, similar to that which was now present in the masseter and temporal muscles. The muscular twitchings were probably in the digastric and pterygoids. Rubbing diminished the spasm for a time. There was no pain; only discomfort, to which he soon accustomed himself. After three or four years he noticed the twitching or fibrillations now present. The tremor ceased at times, but quickly returned on fatigue, exposure to cold, excitement, or any undue emotional stress. About six years ago he noticed the wasting in the right side of the face. Three years ago it became very marked, the teeth became decayed and loose and were easily removed by a dentist. Early last January he contracted right trigeminal neuralgia in all three distributions of the nerve, from which he was now slowly recovering. The physical examination showed that all the cranial nerves were free with the exception of the fifth. The sensory portion appeared intact, with the exception that differential smell and taste were a little slow on the right side, possibly due to the functional defect expressed in the neuralgia. The atrophy of the skin, subcutaneous fat and bone were sharply confined to the supposed distribution of the fifth nerve. There was no defect in the palate or tongue. There was no atrophy nor reaction of degeneration in the motor portion of the fifth nerve, the fibrillation being the only evidence of the involvement of the masseters and temporal. There was, however, a shortening of the masticatory muscle, which apparently restricted the separation of the jaws about one inch; this limitation was described in the absence of fibrillation so that he could do a little better than this, particularly in the morning, after a full night's rest. There were no lateral movements of the jaw, the pterygoids, apparently not functionating. The amount of asymmetry in this case was not so great as in those cases occurring in earlier life, where a hindrance of growth increased the effects of wasting. The atrophy had always been general, and not especially marked in any one spot, as in the facial hemiatrophies of sclerodermal origin or of the morpheal type. The hair and beard did not participate in the affection, although there was a rather marked thinning and whitening at the free border of the hair on the right side of the forehead. The lesion seemed to affect all divisions of the fifth nerve, and was not entirely confined to the right side.

Dr. William M. Leszynsky said that the patient had developed a trigeminal neuralgia on the affected side of the face. The speaker said he had seen several cases of facial tic where subsequently a trigeminal neuralgia developed on the same side.

Dr. Pearce Bailey called attention to the long duration of the hemiatrophy and said that the marked fibrillation was rather suggestive of the analogous condition observed in progressive muscular atrophy.

Dr. J. Ramsay Hunt said he did not see how Dr. Clark could exclude a slowly progressing lesion of the fifth nerve. A slowly growing tumor would account for the neuralgia, the hemiatrophy and fibrillation, and the muscular contractions in the masseter and temporal. The speaker said he thought the sensory symptoms excluded progressive muscular atrophy.

Dr. Clark, in closing, said the analogy between his case and one of progressive muscular atrophy did not go further than the fibrillation. There was no evidence of progressive loss of power in the masseter and temporal muscles. If the lesion suggested by Dr. Hunt was a tumor, it must be a very slowly progressing one, as the condition had existed for eighteen years. Possibly it had to do with the motor division of the nerve only. Slowly progressive alterations in the posterior root ganglions were very likely to be attended with trophic loss without changes in the pain or tactile sensations.

Dr. Clark also presented some X-ray photographs to illustrate an easy clinical method of demonstrating volumetric hypertrophy in bone, muscle and fat in parts which undergo true or false hypertrophy. It obviated the necessity of excising tissue, which was a painful and inaccurate means of determining these alterations, although the latter method must be resorted to in order to determine whether the muscular increase was due to hyperplasia or fiber hypertrophy. The photographs were of a case of hypertrophy of the leg of the paralyzed side of an infantile cerebral hemiplegia. The X-ray negatives were made by Dr. Holding.

A Case of Idiopathic Epilepsy in a Canary Bird.—This case was also reported by Dr. Pierce Clark. The bird was a male, one year old, from a brood of four. The family and personal history was negative. No cause for the epilepsy was known. Typical idiopathic *grand mal* of Jacksonian onset, and *petit mal* occurred irregularly every few days at the beginning of the observation period. After giving a detailed description of the attacks, Dr. Clark said the case was interesting because it showed (1) apparent idiopathic epilepsy in a bird. Nearly all previously reported cases of animal epilepsy, and especially in the bird, where an autopsy was made, proved to be Jacksonian traumatic epilepsies; (2) postepileptic exhaustion paralysis; (3) status epilepticus and death analogous in many clinical respects to that seen in the human.

A Case of Cerebral Tumor, with Specimen.—Dr. Clark reported this case, in order to show the absence of localizing symptoms, particularly astereognosis, which one would expect to be present from the nature, size and position of the tumor. The history of the case was as follows: S. B., aged thirty-six years, a housewife, married two years. A native of Hungary. Her

family history was negative, and she had always enjoyed good health until eighteen months ago, when she began to complain of postoccipital paroxysmal headache, which was especially marked on the left side and extended down into the corresponding shoulder. Six months later the attacks of headache were accompanied by vomiting. On August 13, 1903, one year after the onset of her symptoms, an examination was made which showed that there was no cranial nerve involvement excepting the optic nerve, the power of which was impaired, and in November the patient became completely blind. There was no astereognosis in hand or foot. There were no focalizing symptoms excepting the persistent pain over the left parietal region, which was increased on pressure and accompanied by stiffening of the muscles on the left side of the neck. Inasmuch as the patient became delirious at times from the headache, and as the X-ray negative showed a light shadow approximately in the region of the pain and tenderness, it was decided to make an exploratory incision, which was done by Dr. Hartley, at the New York Hospital on January 20 last. There was considerable bulging in the trephine opening, but the operation failed to disclose the tumor. However, it relieved the patient of headache and all her distressing symptoms. The swelling disappeared from the optic disk and the nerve showed complete atrophy. Three weeks after the operation the patient disturbed the dressing, which she said irritated her scalp. In consequence of this the wound became inflamed, and death resulted on February 24. The autopsy was performed by Dr. Biggs, who found a tumor deeply imbedded in the posterosuperior part of the right parietal lobe. It was round and firm and attached to the neighboring portion of the falx. It was about 4½ cm. in diameter; anteriorly, its border corresponded to the termination of the collosomarginal fissure, and posteriorly it extended to within one centimeter of the parieto-occipital fissure. The probable diagnosis was an endothelioma of the dura.

A Case of Myasthenia Gravis Pseudoparalytica (?).—This was presented by Dr. B. Sachs. The patient was a man aged thirty-five years; a picture-framer by occupation. He had had typhoid fever in childhood, and when he was sixteen years old he had an attack of St. Vitus dance which lasted about four months and was very severe. Five years ago he had pneumonia. Between the ages of sixteen and thirty years he was, comparatively speaking, a well man. In April, 1902, he stated that his tongue felt very heavy; this lasted about six weeks and then passed off. On February 1, 1903, he received a glancing blow on the head with a sharp knife. The knife, which was about 40 inches long and weighed fully 75 pounds, was attached to a table above his head, and came down full force, although it only caused a slight wound which readily healed within a week. In September, 1903, his tongue again began to feel heavy and he became very nervous. At times he did not have the use of his tongue at all. The first examination of the patient made by Dr. Sachs revealed a peculiarity of speech, which was thick and distinctly bulbar in character. The head was inclined forward, and to the right side. He also complained of weakness in his hands, and said he could not do his work properly. Formerly, he had been able to cut through many thicknesses of cardboard easily, but now he did not have the power to draw the knife through. There were no signs of paralysis, but he did not have the grasp of an able-bodied man. He complained of becoming tired after slight exertion. At the time of the first examination, the knee-jerks were absent. Since December 5, 1903, when Dr. Sachs first saw him, there had been a distinct improvement in his speech and general condition. He complained that his vision was at times limited, so that he could not look up well. While using a knife or fork he occasionally halted in the movement for a moment, showing that the effort to use his muscles was at times ineffectual. Since the first examination the knee-jerks had returned and were normal. Another symptom of which he had complained was difficulty in swallowing; food would at times produce a choking sensation and there was occasional regurgitation. He had also complained of drooling. He never had any trouble in chewing his food. There was no fibrillary tremor of the tongue; electrical examinations were negative. Heart and lungs and other organs were apparently normal. The reflexes were not increased. There was no atrophy anywhere, either in the shoulders or upper or lower extremities. Dr. Sachs said he had examined this patient frequently, and the case had puzzled him greatly. The diagnosis had been still further obscured by the fact that the patient had been thoroughly mercurialized, and his gums had become affected. This was also the cause of the drooling. Among the conditions considered were a recurrence of the chorea, with thickness of speech, and amyotrophic lateral sclerosis, but the symptoms did not warrant either diagnosis. There was nothing to indicate the bulbar form of muscular atrophy, and Dr. Sachs said he finally came to the conclusion that the case represented an atypical form of myasthenia gravis pseudoparalytica.

Dr. Bailey said that in the cases of myasthenia gravis he had seen the muscles become easily fatigued. This applied not only to the voluntary muscles, but to the reflexes.

Dr. Hunt said the symptoms in the early stage of the case, as his diplopia, paresthesia of the tongue and absent knee-jerks were rather suggestive of tabes. Dr. Spiller, of Philadelphia, had reported such a case of bulbar tabes about a year ago, in which there was difficulty in deglutition and articulation. The improvement in the symptoms may have been due to the mercurialization; such retrogression in the earlier stage was not uncommon.

Dr. Sachs said that when he first saw the case he was inclined to regard it as an example of the bulbar form of tabes, but he had since been compelled to abandon that diagnosis. The knee-jerks, which were at first absent, had returned. There had never been any lightning pains nor eye-symptoms, nor other evidences of tabes.

A Case of Multiple Neuritis. This case was presented by Dr. Isador Abrahamson. The patient was a woman, who was born in Germany thirty-four years ago. With the exception of an attack of pleurisy three years ago, her personal history was negative. Her present illness dated back to February, 1903, when she noticed some weakness in the legs, especially the right one. In March she had an attack of cough, with expectoration and pain, especially over the left shoulder-blade, and her attending physician told her she had a recurrence of her pleurisy. Three or four weeks later she had an attack of vomiting and diarrhea, with edema of the face and all four extremities; the latter symptoms were not marked; there was some fever. The urine was negative. A "leaky heart" was diagnosed by her physician. She now began to complain of pain chiefly at night; it was boring in character, involving the outer sides of both legs. There were no local signs excepting tenderness on pressure along the outer surface of the legs. The pains and weakness in the legs progressed, and four weeks later she began to complain of numbness in the hands, especially the right, with beginning weakness on the thumb side more than on the ulnar. There was noticeable wasting in the legs, chiefly on their outer surfaces, and paresthesia in the region of the thighs, legs

and feet. During all this time the patient remained in bed, suffering from frequent urination and diarrhea. Her fever lasted about two weeks. The diagnosis made at this time was influenza. Upon attempting to leave her bed, she found that she was unable to walk. Dropped feet were apparent, and to a lesser extent dropped wrist. The physicians in attendance called the condition neuritis and partial muscular paralysis. According to their statement, no sensory disturbances were present. The patient stated that she felt at all times the slightest touch, and that she was able to distinguish pin-pricks and hot and cold applications. She felt acutely the application of the faradic current. She was seen by Dr. Rieser on October 1, 1903, who found no sensory disturbances, although multiple neuritis of influenzal origin was diagnosed. The case was referred to Dr. Abrahamson on October 26, 1903. At that time some improvement had already taken place. There was marked motor weakness in both forearms and hands, and some wasting of the right thenar eminence. There was partial dropped wrists on both sides. The deep reflexes were absent; there was some ataxia, chiefly on the right side. The greatest weakness was in the extensors of the forearm; in the flexors of the hand and in the pronators and supinators. No sensory disturbances could be elicited. The heart was apparently normal and the trunk muscles intact. The abdominal reflexes were present.

There was a distinct dropped foot, and the patient walked very unsteadily. There was some wasting of the peronei muscles. There were no fibrillary twitchings. The knee-jerks and Achilles reflex were absent on both sides. The feet were cold and somewhat congested. There was tenderness along the perineal nerve; less along the posterior surface. Decided reaction of degeneration in peroneals. With the exception of slight tactile uncertainty, occurring only at times and not at all constant, there were no changes in tactile, pain or temperature sensations. The patient was treated with electricity and strychnine and improved rapidly. She was now able to walk alone, although there was still some peroneal weakness. In view of the history of edema, diarrhea and vomiting, the distinctly peripheral character of the paralysis, the paresthesia, pain, nerve tenderness, etc., and the rather slow but progressive character of the onset left little doubt as to the diagnosis, in spite of the absence of objective sensory symptoms. Landry's paralysis, the speaker thought, could be excluded, though there were many points of resemblance. The etiology of the multiple neuritis, upon careful examination and questioning, negatived any metallic poisoning, and influenza had to be assumed as the etiologic factor. A few similar cases had been reported by Bloeq and others.

Dr. Sachs said if there was one fact that had been learned about multiple neuritis, it was that for some reason which it was difficult to explain sensory symptoms were almost invariably less prominent than the motor. He considered the motor form of multiple neuritis infinitely more common than the sensory. In the earlier stages of the disease there was usually some sensitiveness to pressure over the nerve, but actual objective sensory symptoms were frequently absent in the most pronounced and indubitable cases of multiple neuritis.

Dr. Leszynsky said he agreed entirely with Dr. Sachs. In several cases of multiple neuritis, however, he had observed slight sensory disturbances in the early stages, which disappeared within a few weeks. In the later stages of the disease he found no sensory symptoms whatever.

Dr. Clark said he had seen a number of Barnes' cases in London, and listened to a discussion upon them. They distinctly represented a form of polyneuritis, involving the motor fibers of the nerve almost exclusively. In the course of the discussion, one of the speakers said he doubted whether there were any cases of purely sensory neuritis.

Dr. Abrahamson, in closing, said this was the only case of multiple neuritis he had seen that had not shown at any stage the least objective disturbance of sensibility.

A Case of Recurrent Peripheral Facial Paralysis.—This case was also presented by Dr. Abrahamson. The patient was a man, thirty-two years old, a hatmaker by occupation. His family history was negative. Six months ago a physician who examined him for a lodge found albumin in the urine. Denies syphilis. He used alcohol and tobacco in moderation. He stated that in the preparation of the felt for hats, mercury and probably arsenic was used for shrinking purposes, and that many of his fellow-workmen exhibited tremor and salivation. Personally, he had never shown any symptoms of mercurial poisoning. The patient's symptoms were those of peripheral facial palsy, of which this was his fourth attack. His first attack was on the right side, and occurred sixteen years ago, all three branches of the nerve being involved. The attack lasted three or four months. His hearing remained normal; there was no otitis. The attack was attributed to exposure. He made a complete recovery; there were no sensory symptoms. His second attack occurred four years later. It was on the left side and all three branches of the nerve were involved. It lasted about the same length of time as the first. There was no otitis; no sensory symptoms. Recovery was complete. The third attack was also on the left side, and occurred seven years ago. All three branches of the nerve were involved. There were no aural symptoms. The attack lasted four months; recovery was complete. His present attack dated back to February 3, 1904. It began with pains radiating from the left aural region to the left lower face, and was followed by paralysis of all three branches of the left facial nerve. Hearing was not impaired; there were no evidences of any otitis. The patient also complained of some weakness and a cramp-like feeling in the left hand, especially when grasping objects. There was no headache, vertigo nor vomiting. His mentality was not impaired. There was no difficulty in swallowing, speaking, etc. Micturition and defecation were normal. He had never had diplopia. Examination revealed a paralysis of all three branches of the facial nerve. The tongue was drawn slightly to the right; the uvula markedly so. Taste was impaired over the left half of the tongue. Hearing was not impaired. The ocular movements and superficial reflexes were normal. There was no ataxia. No evidence of lues. The sensibility, especially to temperature, was markedly diminished over the left half of the body, excluding the genitalia.

Dr. Abrahamson said the case was particularly interesting on account of the multiplicity of the attacks. As to the cause of the attacks, syphilis was apparently negatived by the absence of any history or findings indicating that disease, the vague nature of the ophthalmoscopic findings (which upon second examination were negative), the completeness of the facial palsy each time, the absence of involvement of any other cranial nerves, and the completeness of recovery without specific treatment. As to the cause of the attacks, mercury, with or without arsenic, was possibly the true etiological factor. The associated hemianesthesia was no doubt of a hysterical nature.

Nervous Symptoms in Three Patients with Azoturia.—Dr. William H. Thomson read a paper on this subject, in which he stated that it was his routine practice with all patients who consulted him for nervous

ailments to have frequent examinations made of the urine for the purpose of determining the daily output of its *normal* ingredients. Repeatedly, in many cases of so-called neurasthenia, the reports would show that the excretion of urea would be only from one-fourth to one-half of what it ought to be, with sometimes a corresponding diminution of the other solids of the urine, and sometimes not, but rather an excess of the other saline ingredients, with a marked diminution of urea. Occasionally, however, he has had patients narrate a series of symptoms resembling in many particulars those showing deficiency of elimination, but on examination they proved to have a marked excess of both urea and solids amounting in one case to ten times the quantity of urea of another patient who clinically might have been classed with him as a typical neurasthenic. To illustrate this condition, Dr. Thomson briefly reported three such cases coming under his observation. In all three of these cases, pain in the eyes, especially from reading, was a leading symptom. What connection there could be between their ocular troubles and the marked excess in the excretion of urea and of other solids he could not say, and he was inclined to look upon their occurrence as accidental. His own view about the nature of these cases was that they were related to diabetes mellitus, and he would term them urea diabetes in distinction from saccharine diabetes. He did not venture to guess what the underlying cause of this particular form of systemic waste could be, but following his hypothesis, he laid down for these patients the same line of treatment which he would for a diabetic. His notes showed that these patients could not digest starches, and for that reason he largely excluded farinaceous articles from their diet and then prescribed the antiseptics which he had treated of more fully in a recently published paper on the Medical Treatment of Diabetics. Dr. Thomson said that in none of his three cases were the patients large meat eaters. The first patient said she could not eat meat with any comfort, and rarely touched it. The second patient said she had given up beef and mutton some years ago because it usually gave her a headache. The third patient was almost an anchorite and was practically starving himself, as he believed that his stomach was the cause of all his troubles.

WILLS' HOSPITAL OPHTHALMIC SOCIETY.

Stated Meeting, held March 14, 1904.

The Chairman, William Zentmayer, M.D., in the Chair.

DISCUSSION UPON GLAUCOMA.

Glaucoma.—Dr. Frank Fisher, in order to open the subject, cited the histories of two diametrically opposed types of such cases which had recently come under his observation. He desired to know under what conditions an iridectomy should be performed; when should enucleation of a glaucomatous blind eye be done; and if enucleation be done, what effect would the procedure have upon the fellow eye. He was uncertain as to the character of the visual fields serving as a guide to the value of an iridectomy, they being so unstable and uncertain. His experience had led him to ignore the usefulness of the degree or the grade of visual acuity as offering itself as a therapeutic guide. In some eyes which had become blinded from glaucoma processes, he had found that eserine failed to produce pupillary contraction. He had been interested in studying a series of cases of glaucoma, in which there had not been any consanguineous marriages: he gave the detailed history of one such family, and had more or less knowledge of some others. He inquired what had been the experience of members of the society in regard to the ophthalmoscopic appearances of the eyeground and media after the performance of posterior sclerotomy. He asked this question as he had seen two cases in which he could locate the position of the internal traumatism by a localized rupture of the chorioid. He would like to know the most tenable theory for the more or less reduction of intraocular tension in cases in which posterior sclerotomy had been done. He asked the question whether the vitreous elements were reformed or not. He would like to know if any members of the society had, like himself, seen recession of optic nerve head cupping after successful iridectomy.

Enucleation and Iridectomy.—The chairman stated that he enucleated the offending eye in absolute glaucoma, with a possible previous attempt at iridectomy. He performed an iridectomy, if possible, in acute inflammatory glaucoma. His studies with the visual fields in chronic glaucoma had taught him that the character of decreases and the peculiarities of lessened areas were not in any way characteristic or typical.

Remedial Measures.—Dr. Conrad Berens believed that enucleation tended toward the conservation of the energies of the other eye; his experience being that vision and intraocular tension of the remaining eye are preserved for much longer periods of time. His experience had taught him that the earlier an enucleation is done—particularly in a painful eye—the safer it is for the other one. If possible, he preferred an early iridectomy in all appropriate cases. In some cases of systemic type he eschewed all forms of operative procedure and preferred to wait for some acute condition necessitating radical measures, watching and guarding over the general system, and directing his main therapy toward the general dyscrasia at hand. He had found good results from the ingestion of large doses of iodide of potassium in association with the salicylates. He had found that the more he had to deal with the condition, the more he depended upon remedial measures, reserving, as a rule, operative interference for cases of the fulminating type. He had observed the effects of climate upon such cases, and spoke of the effects of psychological processes upon the condition of the patient. He mentioned his experiences with the results that he had obtained in some of his chronic cases by the employment of varying strengths of synoidal currents.

Dr. McCluney Radcliffe showed a case under his care in the hospital in which by enucleation of the blind eye, in combination with appropriate local and general treatment, the ordinarily seen progressive and disastrous symptoms, he felt sure, were rapidly and painlessly disappearing in the fellow eye.

Removal of the Crystalline Lens.—Dr. Charles A. Oliver said that no fast and hard law could be laid down in any particular case. Each one, and even the same case at different times, demanding what might be aptly termed "symptomatic treatment." After a large experience with various operative measures, in association with carefully graded local and general therapy, and above all, hygiene with well-regulated cheerful surroundings, and early treatment directed toward the removal of any possible offending dyscrasia, he had in many cases, ceased to be disturbed as to the probability of ultimate failure; in other words, he made it an unalterable rule to exercise constant vigilance against the general and special inroads of any causative factor with the prompt removal of the disturbing local conditions in the easiest and the most conformable way possible in each case. Whenever possible, he enucleated an eye which had become blinded from glaucoma, as he had learned from experience that it was the safest and the most certain of all of the radical procedures

in certain types of cases for the good of the fellow eye; in fact, he was certain that it undoubtedly seemed to have a beneficial influence upon the fellow organ, whether it was injured or not. The question of the performance of an iridectomy he reserved to cases in all stages, more particularly the incipient and practically unadvanced ones in which he felt that there was either a present necessity or an advantage in the future to be gained by opening as much as possible of an imperfectly acting filtration angle. In some cases of coarse severity, he repeated the iridectomy and even had successfully and usefully removed the crystalline lens. He uniformly reserved his operative procedures to the individual organ in question. He spoke of having seen some cases in the hands of some of his colleagues apparently do well by the employment of cyclotomy, and believed that the measure, if not too disturbing in its immediate traumatism, possibly did good by destruction of some of the lymph making glands. He asserted his disbelief in a proper regeneration of the vitreal elements, believing the vitreous to be like the crystalline lens, an organized body, which once removed or destroyed, was replaced with ordinary lymph: in consequence, he doubted the efficacy of all procedures in which loss of the vitreous body constituted a part. He denounced the term "liquid or fluid vitreous," and said that the replacement of the vitreous humor by ordinary lymph in which there were loose vitreal elements with uveal débris merely tended to provoke glandular action with consequent increase of the intraocular fluids. He spoke of the classical experiments of Uribe Troncoso upon the effects of altitude upon the density of the intraocular fluids, as well as the morphological conditions of the fluids themselves. As one of the results of a return of intraocular pressure to normal, he had more than once seen temporary lessening and even disappearance of shallow pathological cuppings in the optic nerve head, particularly in the temporally placed finer fibers.

Posterior Sclerotomy.—Dr. S. Lewis Ziegler spoke of the advantages and the good results he had personally obtained in certain varieties of cases by the performance of posterior sclerotomy. He made the procedure by a quick plunge with a von Graefe knife with its back directed toward the ciliary body some six or eight millimeters back of the ciliary region, between the muscular attachments, and parallel with the radiating vessels. He rotated the knife at right angles to the first incision, allowed a few beads of vitreous to escape, and withdrew the instrument, thus making a T incision. He had found that there is immediate hypotension and there is never any reaction. His experiences had coincided closely with those given by Dr. Oliver. In the blind eyes of some such types he had had useful recourse to opticociliary neurotomy, having, he remembers in more than one instance, kept a functionless eyeball intact and free from pain and harmful influences for a period of nine years. He mentioned several interesting examples of the various conditions, showing the multiplicity and variability of the symptom-complex in cases which had come under his immediate observation; distinctly proving the efficacy of certain procedures in some cases, and the inefficiencies of many authoritative measures that had been strictly applied, in others. The more extended his experience had become in such an enormous mass of material as was almost daily given him in such a large service as in the outpatient department of the hospital, the broader and the more conservative had become his views in regard to therapeutic measures. He was daily waiting for opportunity, and was more than willing to apply any plan of therapy which offered in the least a greater chance for the patient's welfare. Upon being asked whether he would do an iridectomy at the time of the appearance of the earliest signs and symptoms of the disease, he answered that he would in appropriate cases. He had never had any intraocular complications of inflammatory type to arise after the performance of posterior sclerotomy. In a number of painful cases in which immediate operative procedure could not be done, he had most useful recourse to a formula containing hyoscine, hydrobromate, morphine, strychnine, and pilocarpine; a combination which not only subdued pain, but which both stimulated and controlled lymph circulation. In support of his claim for the value of these therapeutic agents, he cited three most interesting confirmative cases which he had seen at the hospital several years previously. In the use of electricity he had had considerable experience, finding a most curious paradoxical result that pain and tension are reduced when the negative electrode is applied to the eyeball. In his hands, pneumo-massage had given but moderate effects in some cases of chronic glaucoma.

NORTH BRANCH PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, held Thursday, April 14, 1904.

The President, Samuel Wolfe, M.D., in the Chair.

Some Reflex Conditions Caused by Foreign Bodies in the Intestinal Tract.—Dr. Anna M. Reynolds read this paper. The first case was that of an infant six months old, taken suddenly ill in the morning with diarrhea followed by vomiting, which was diagnosed on the fourth day as caused by the uterus pressing on the bowel. The next day several hard convulsions occurred resulting fatally and the condition was found to be impaction of the bowel. The second case was a female, aged fifty-two years, who began with convulsions when a baby, two years later developing epilepsy, for which she was treated by a German doctor by means of large doses of calomel and castor oil and for about twelve years filled a responsible position. Another case which was diagnosed as extrauterine pregnancy proved to be a mass of blackberry seeds. The fourth patient was a male infant who began with bilious attacks, which increased in frequency and finally he lost consciousness; the case was diagnosed as epilepsy. Upon the administration of half a grain of calomel every hour for six doses followed by castor oil, a brass button with a shank was passed, which he had lost off his coat and the convulsions ceased. The fifth patient was subject to constipation and dizzy spells and one morning had two in succession. Calomel and castor oil and liquor potassium arsenitis were administered and in two years there has been no return of the symptoms. The sixth case was that of a young man who had convulsions at the age of three years and at twenty-four developed epilepsy. He was treated by the bromides with no success, after which he went to the country and gave careful attention to his diet and bowels, and has had only two very light seizures in four months.

Dr. Boardman Reed believed that there were a great many more conditions resulting from reflex symptoms of the intestinal tract than is usually recognized, not only epilepsy, but also headaches, nervousness, etc., and that even true epilepsy was much aggravated by disturbance therein, and recommended thorough daily evacuation of the bowels.

Dr. William H. Good referred to the case of a woman who was troubled with hoarseness which disappeared after the expulsion of a large amount of worms.

Dr. Mordecai Price referred to a case of epilepsy

which had been under his care for a year, in which the bromide treatment had been of no avail; upon cessation of the treatment the symptoms cleared up.

Dr. Frank White referred to two cases as illustrating the tolerance of the intestinal tract without producing reflex symptoms in some cases. In the first, a foreign body, 5½ inches long by 1½ inches in thickness and weighing 4½ ounces was removed from the stomach of an idiotic boy at autopsy; and in the other case about 15 whole shellbarks and about half as many in pieces were removed from a boy's rectum. In neither case were there any reflex symptoms.

The Surgical Treatment of Abortion.—Dr. Frank C. Hammond read this paper. He stated that it was always desirable to ascertain when threatened abortion becomes inevitable, as the treatment will be thereby radically altered. He called attention to the fact that hemorrhage more or less persistent might exist, even during the entire period of pregnancy, without producing an abortion. He cited the cases observed by Playfair, Charpentier, Doloris and others, in which pieces of decidua were expelled without the interruption of pregnancy. When the abortion is inevitable, the chief dangers are from hemorrhage and septicemia, either general or a local infection. Tetanus occasionally follows abortion. Suspicion should always be directed to every case resembling acute articular rheumatism, following a recent abortion, as it is much more likely to be suppurative arthritis, which should be treated by free incision and drainage, strict antisepsis being observed. The remote dangers from abortion are inflammatory disease of the uterus and adnexa, with the resultant train of pelvic and reflex symptoms. He reported a case in which two Italian physicians had diagnosed malignant uterine disease in a woman of fifty years, in which curettage, and packing with iodoform gauze, proved the case to be one of incomplete abortion with retained putrefactive débris. The author believed that if every case of inevitable abortion was submitted to an antiseptic curettage properly done, the mortality would be nil, excepting criminal abortions. He believed that the expectant plan of treatment will produce the best results in the hands of the general practitioner, so long as fever, excessive hemorrhage and putrefaction are absent; any retained débris should be removed, for, even though it does not produce fever or sloughing, it may cause inflammatory disease of the pelvic organs and invalidism. The author referred to a case which he operated upon for bilateral laceration of the cervix and lacerated pelvic floor, no disease of the adnexa, in which the uterus was literally filled with débris, the woman admitting to over 20 self-induced abortions. When abortion is inevitable, the uterus should be at once thoroughly emptied under anesthesia. The treatment of sapremia following abortion should be by emptying the uterus and thorough disinfection of the genital tract with intrauterine douches of formalin 1.1,500; or sublimate solution 1.3,000 or 4,000, followed by normal salt solution, to avoid the danger of mercuric poisoning. The treatment of septicemia depends upon the character of the infection and may be either by measures tending to neutralize the bacteria, or surgical by the evacuation of pus or the removal of the diseased organs. Difficulty of differential diagnosis is experienced when typhoid makes its first appearance at childbirth. Intravenous injections of normal salt solution, quinine, strychnine, digitalis and atropine, as indications arise; and careful regulation of the diet should be enforced, and in severe cases collapse may be overcome by ammonium carbonate per rectum and nitroglycerin hypodermatically. The treatment of septicemia due to streptococci should be by means of antiseptic uterine douches and drainage by loosely packed iodoform gauze; curettage should not be employed owing to its likelihood of spreading the germs and the production of general infection in an already localized case. Pryor advocates the isolation of the infected uterus between masses of iodoform gauze and local and systemic iodism, to destroy the cocci, locally and systemically. Pus tubes and ovarian abscesses should be removed, either per vagina, or by abdominal incision, depending upon the accessibility of the lesion and the condition of the patient.

Etiology and Medical Treatment of Abortion was considered by Dr. I. P. Strittmatter, who stated that the most frequent causes of abortion in his experience had been as follows: (1) Prior criminal abortion; (2) syphilis; (3) pyosalpinx; (4) backward displacement of the uterus. In the first class of cases, careful curettage and packing and general tonic treatment; in the second class of cases, administration of the iodides and general antisyphilitic treatment, and in the fourth class suitable operation had given the best results. In those cases in which there is a relaxed condition of the muscles and joints, with frequent attacks of rheumatism and sometimes attended by heart lesions, antirheumatic treatment should be instituted.

Medicolegal Aspects of Criminal Abortion.—This paper was read by Thomas W. Barlow, Esq., of the Philadelphia Bar, in which he referred to a paper written by Dr. Andrew Nevinger in 1870, who was then President of the Philadelphia County Medical Society, in which he urged upon the clergymen to exercise their influence with the women of the church in reference to the crime of abortion and calling their attention to the consequences of it; and urging the passing of a law prohibiting it. He referred to the difference in the laws of various States on this subject, and called attention to the fact that the law of Pennsylvania applies to an abortion committed at any time during pregnancy, while in other States it must be done when the woman is "quick" with child. He believed that the laws of Pennsylvania were quite sufficient in this respect and that if the crime was increasing it was due to the nonexecution thereof by those on whom the obligation rests. He referred to the function of the police department, detective department, magistrates, coroner, district attorney and courts in the prosecution of such crime, and stated that it was impossible that all should be accomplished by the police power, and suggested that the work against the professional abortionist rests entirely within the medical profession itself. He recommended that a committee be appointed to take charge of the matter, which he believed would have a deterrent effect upon such lawbreakers.

Dr. Richard C. Norris, in the discussion, stated that while he appreciated the sentiment that prompted Mr. Barlow's suggestions, he felt that there were certain practical difficulties in the way, the chief of which was the confidential relation that existed between physician and patient, which deters the physician from reporting the case to the authorities, particularly, as is frequently the case, when a physician is called in after an abortion has been committed one or both of the parties are of high social standing. Another difficulty is the shrewdness with which the abortionists do their work, making it almost impossible to secure legal evidence against them. Many of them even subject their patients to an oath, who in numerous cases, even with a knowledge of impending death will not reveal the author of the crime, owing to the sanctity of the oath. He believes that the appointment of a committee might have a deterrent effect upon a certain class but that the most good could be accomplished by the medical profession by

teaching their patients the moral wrong and great danger of the procedure.

Dr. A. M. Eaton urged that the physician impress upon any patient who should request him to perform an abortion the moral turpitude of the crime, and referred to three cases, in which the women had desired to have act committed, who had been deterred therefrom by his suggestion to go to a secluded part of the city until after the birth of the child. He referred to the case of a barber who stated that he had performed over 250 abortions without any fatalities by taking a soft catheter, inserting it in the womb and injecting milk and carbolic acid "until something gave way."

Dr. Mordecai Price stated that he never treated a case of abortion until he was informed who had performed the operation, which course he deemed necessary for the safety of the attending physician. In any case in which the fetus is dead, he believed that it should be removed at once, and when either the membranes or the fetus are discovered to be coming away, the uterus should at once be emptied, with the hand, the curette being used only in cases of necessity. He did not sanction irrigation of the uterus with any fluid and particularly deprecated bichloride of mercury douche.

Dr. A. C. Morgan referred to a case which had come under his notice in which the girl was of very high standing socially, and in which he felt that his professional relation would have prevented him from giving evidence to convict the abortionist, and this, he agreed with Dr. Norris, was the practical difficulty in the way of the conviction of these men.

Dr. W. E. Parke raised the question as to whether the physician should report a case when he is called in or should the whole thing be kept quiet. He referred to a case which he had seen, in which there had been bleeding and straining for twenty-four hours, and although the patient absolutely denied any action to induce abortion, it was evident that such was going on. No urine had been passed since the beginning of the attack, and catheterization yielded about a dram of almost pure blood, which could not be accounted for. A few hours later the uterus was cleaned out and three hours thereafter catheterization yielded about a dram of a slightly less bloody fluid. The next morning it was discovered that there was an opening from the bladder into the genital tract. The patient apparently improved; the temperature became normal and the pulse nearly so for about two weeks, when she was taken suddenly worse and died. The conclusion was reached that the fistula in the genital tract was produced by pushing something into the bladder through the vagina or cervix, in an attempt to produce an abortion.

Dr. Henry S. Cattell recommended that a black list be kept by a Committee of the County Medical Society of all the physicians and others who are suspected of doing this work, which should only be accessible to such committee, and believed that many physicians would give information to such a committee, with the understanding that it would not be given publicity, that they would not give otherwise. He stated that he made attempts by communicating with the post-office authorities at Washington to have the mail of certain of such practitioners withheld, but had been informed that there was not sufficient evidence to warrant this course.

The papers were also discussed by Dr. Anna M. Reynolds and Dr. Hammond, who, in closing, felt that the untoward effects produced by the use of the curette were rather the fault of the operator than the instrument. He stated that he could see no reason for objecting to free irrigation of the uterus, as any infected wound should be treated by irrigation and drainage; if bichloride of mercury douche is used it should be followed up by normal salt solution in order to prevent mercurial poisoning.

Thomas W. Barlow, Esq., in closing, urged upon the audience their duty to report every case of crime of which they had knowledge, but whether the relations with the patient were such as to deter such action he felt must be decided by the physician in the individual case. He also dwelt upon the importance of the coroner's office and the necessity for the continuance thereof.

BOOK REVIEWS.

Army Inefficiency, its Greatest Cause. By A. C. Profeit, M.B., Lond. J. & A. Churchill, London. P. Blakiston's Son & Co., Philadelphia.

The preface of this little book states that the greatest of all causes of army inefficiency is the excessive prevalence of venereal diseases. It continues: "It is idle to expect efficiency until some steps are taken for their prevention." The author discusses the condition of affairs with regard to venereal disease in the British army in the various parts of the world and the history of the Contagious Diseases Act which was meant to prevent them, did actually accomplish good, but has been repealed. The book is all the more interesting, now that in this country we are in a position in which we are compelled to maintain military forces larger than before, and in various parts of the world.

The American Year-Book of Medicine and Surgery for 1904. Under the editorial charge of George M. Gould, A.M., M.D. In two volumes. Volume I, including *General Medicine*. Octavo, 673 pages, fully illustrated. W. B. Saunders & Co., Philadelphia, New York, London.

It is an axiom that every practitioner of medicine should attempt to keep abreast of the progress of his science. Doubtless the great majority of them realize this fact, some more acutely than others. Yet the activity of research in every branch of the art is so remarkable, and the volume of publication so enormous, that the task becomes a practical impossibility, if it is attempted at first hand. It is to the various compends, "Centralblätter," and so forth, that the practitioner must look for a summary and criticism of what is new, and what claims to be good. Saunders' Series of American Year-Books have long been known as one of the best types of this class of literature, and, under the general editorial supervision of Dr. George M. Gould have achieved an excellent reputation for thoroughness and good judgment. The Year-book of Medicine for 1904 is no exception to the rule set by its predecessors. The subject has been divided into ten sections, which include not only the branches of general medicine, but also pathology, hygiene, chemistry, legal medicine and materia medica. The general plan of summarizing the more important literature of the year, both American and foreign, has been adhered to, and these briefs are in most cases illuminated by critical remarks by the editors. Fair-mindedness and a certain breadth of view are, therefore, essentials in the make-up of a work of such a nature, since the bias of the reader is largely determined by the editor. It is a pleasure to find that these qualities are nowhere lacking in the book, and one may accept the obiter dicta of the editors in most cases as very sane and conservative criticisms. The general make-up of the book in technical respects is excellent, and the index is ample.

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ORIGINAL ARTICLES.

SOME NOTES ON VOCAL FREMITUS.[1]

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IN the current text-books the notices of palpation of the chest as a means of physical diagnosis are, I think, surprisingly inadequate. And after talking and working with medical men—many of them well-trained and acute observers—who come from various colleges in the United States and Canada to this city for study, one can hardly avoid the impression that palpation has fallen into professional disesteem. Every one seizes his stethoscope and at once begins to listen,—as though in comparison with auscultation all other methods were negligible. When, for example, I say that the first and earliest sign of pneumonic consolidation, antedating bronchial breathing and pectoriloquy by twelve to thirty-six hours, is increase of *fremitus* over the suspected area, I am not infrequently met with confessed ignorance or even with incredulity. I venture therefore to make herewith a modest plea for palpation.

And inasmuch as the palpation of the heart and vessels is a large subject naturally falling into a division by itself, I shall limit myself to-night to some rather irregularly arranged observations on *vocal fremitus.*

The Latin word *fremitus* might be nicely defined by its English equivalent *growling.* The French physician Reynaud *(Journal Hebdomadaire,* 1829) is said to have been the first to observe its practical value in physical diagnosis. Fremitus may be classified as (1) *rhonchal,* arising from coarse râles, moist or dry; (2) *tussive* or *tussile,* from coughing; (3) *borborygmic,* from transmitted gurgling of intestinal gas; (4) *pleuritic,* (5) *succussive,* (6) *cardiac* and *vascular,* and (7) *vocal.*

Vocal fremitus is cognized by the touch and pressure senses. It is the jarring or "growling" sensation imparted to the fingers by vibrations from phonating vocal chords when the hand is placed on certain parts of the patient's body.

The source of the sensation, the vibration of the chords, is reinforced by the resonance of the mouth and nasal passages. The oral resonance is greatest for tactile purposes when the vowel sound of $\bar{o}$ in *soon,* or $\breve{oo}$ in *foot* is made, the mouth cavity then being at its longest by the protrusion of the lips, and the fundamental note of the chords (that of lowest pitch) being reinforced, while the overtones (of less volume and higher pitch) are practically effaced. This curious fact, long ago experimentally brought out by students of the subject and fully confirmed scientifically by Helmholtz, can be verified by any one for himself when an intelligent male patient is in hand with good control of the voice.[1]

Instead, then, of the stock phrases "one-two-three" or "ninety-nine," the patient can often with better advantage be required to *sing* the sound $\bar{oo}$ or $\breve{oo}$ in as bass a voice as practicable, or to speak words like *good, boodle, rood, moon,* and no combination of words should be used in which *h, k, t, p, ph, f, th, ch, sh,* or *s* appears, as their proper pronunciation momentarily suspends the vibration of the chords.

Vocal fremitus is of course more reliable when the patient can maintain the initial pitch and intensity of his utterance to the end of the trial. This is a common source of error with students, the subject dropping his voice from fatigue or inattention when half way through the vocal exercise. In cases of extreme weakness or of aphonia from whatever cause, I have thought that a substitute for the vocal chords might be supplied by a reed horn of good size between the patient's lips, but from other considerations this resource would naturally be of limited usefulness.

I need stop only a moment to observe that the vibrations of the voice whether palpated or listened to, have of course *quality* or *Klangfarbe* as well as *pitch and intensity;* but inasmuch as the quality is nearly invariable in the individual patient, we will consider pitch and intensity only.

The variation of the fremitus with the varying loudness of the voice is familiar to all beginners; the louder the voice the *longer* the individual sound waves are, and a large wave of any length is of course more palpable than a small one; though I am not satisfied that the two vary in mathematical ratio.

As to *pitch,* the lower the *pitch* of the voice, the fewer the vibrations per second; and the fewer the vibrations, the more perceptible to the nerve ends the individual waves again become. The practical value of this fact is, however, overlooked in the text-books. With women and with reasonably intelligent children over six years of age, a marked improvement in the palpability of the fremitus can be obtained at once, if the patient be told to speak in as deep a voice as possible instead of in the usual shrill tone. The fremitus over the lower part of the left lung so often absent—*i.e.,* subliminal—in the patients mentioned, can by this means be usually magnified to a degree readily perceptible to the fingers.

Palpation of the fremitus should be made with

[1] Read before Section in Medicine, New York Academy, January, 904.

[1] A fact observed long ago may be incidentally noted, that when egophony is absent or only feebly present with other vocal sounds, it may be made much more apparent to the ear by phonation of the same sound, $\bar{oo}$.

the hand the observer uses most, and with the palmar surface of the four fingers. Usually not enough vibrations are taken up by two or three fingers to form a reliable judgment. Sometimes only the whole hand can collect a palpable vibration, the motion being otherwise subliminal. I do not think the *side of the palm* is the best means of testing fremitus; first, because its superficial area is often too small; secondly, because the palmar surfaces of the fingers and hand have many more tactile nerve endings to the square inch than the side of the palm has; and thirdly, these nerve endings are usually highly specialized by frequent use. Two symmetrical areas of the chest should be compared *successively* with the same hand; in using two hands at once the hand less often exercised will be less sensitive, and, moreover, the attention is divided and a nice distinction prevented.

An instrument of precision (less cumbersome than the large machines of the physical laboratory) for determining the exact intensity of fremitus is greatly to be desired, and ultimately it will doubtless be invented; but meanwhile a highly trained tactile sense is often capable of extraordinarily fine discriminations, and there seems to be no limit to its perfectibility by practice.

It is usually stated that fremitus is conveyed to the chest through the wind-pipe, aerial vibrations being transmitted on the principle of the speaking tube. This doubtless is true, but it seems reasonably sure that the stout and firm walls of the trachea and bronchi also assist, and perhaps to a marked degree. Fremitus is also conveyed by the vertebral column and true ribs. A brisk fremitus can be felt at the top of the head, on the back bone, and even on the sacrum when a strong male larynx is phonating. The rib fremitus, however, is probably impalpable; at all events being equally conveyed to the two sides it has only a secondary bearing on diagnosis.

I think it ought also to be noted that accumulations of fat and muscle on the exterior of the chest are not so destructive of fremitus as is usually observed. I noticed in a patient recently under observation, who had congenital absence of the right pectoralis major and minor, with absence of the anterior fold of the right axilla and apparently normal lungs,—that the right fremitus seemed very little increased over the right thorax in comparison with the left.

All teachers emphasize more or less the excess of the vocal fremitus on the right side, in front. Some of the text-books give forth a more dubious sound when speaking of the relative fremitus behind. As a matter of fact fremitus is everywhere larger on the right side than over any *symmetrical portion* of the left side; and the posterior right-sided fremitus is often larger than the anterior. That is, I think it safe to say that in 60 to 75 per cent. of cases with the patient in the usual position for examining the back, the right vocal fremitus below the angle of the scapula is *absolutely* larger than over any other part of either right or left chest.

The dextral excess is usually, and I suppose correctly, explained as the result of the relative anatomy of the right and left bronchus, into which it is needless to enter. A. A. Smith affirms, and I think with correctness, that the heavy and firm mass of the liver reenforces and reflects the dextral fremitus.

I wish to remark also on the *degree* of the right-sided excess. And first as to age, excess of right fremitus is physiologically greater from the tenth to the twenty-fifth year than at other ages. This fact was also first called to my attention by Dr. Smith. The reason is doubtless developmental; some satisfactory explanation might be found by measurements of the relative growth of the right and left bronchi during adolescence. None such have been made, so far as I am informed, but patient observation in a large clinic for some years will convince almost any skeptic that the assertion is true.

A numerical comparison of the normal right and left fremitus may seem far-fetched and even provoke a smile when the fingers are the only guide. I venture, however, to affirm that if (with the age limitation just mentioned) the right subclavicular fremitus be called 3*a* the left will be usually 2*a;* or, if the right be 4*a* the left will be 3*a,* making a normal ratio (right to left) of 3 : 2, or 4 : 3. When the right excess becomes greater than this and the ratio becomes 3 : 1½ or 4 : 2, or 6 : 3, the condition is *pathological,* though from fremitus only it is not always possible to say what is wrong.

Another important fact (perhaps already observed and described by some one, though I have found no printed reference to it) is that the palpable vibration gotten by putting the four fingers transversely and snugly over the larynx (Adam's apple) is generally four or five times as great as the right subclavicular fremitus; the two being related as 5 : 1 or 4 : 1. *If the right or left subclavicular fremitus becomes for any given voice widely variant from this ratio, the condition is pathological.* I find that a diagnosis of consolidation of the right apex when the laryngeal fremitus is to the right subclavian fremitus as 4 : 2 or 6 : 3, is usually confirmed by the other signs. If this seems an *ex cathedra* statement, I ask only that it be given a careful trial before it be disputed.

The normal relation being as described, when the fremitus on the two sides is *equal* we confront a difficulty, namely, Can it be an accidental anomaly, or is it pathological? Here, of course, the autopsy would be the ultimate appeal, but if we may draw safe conclusions clinically, I should say that the right-sided excess is one of the most fixed and permanent phenomena in thoracic diagnosis, and that in 99 cases out of every hundred bilateral equality is pathological. *A fortiori* sinistral excess is pathological.

The causes of equality or of left-sided excess are in general four:[1] (1) Left consolidation;

[1] Mutatis mutandis the first three also explain pathological right-sided excess.

(2) Any process on the right side which dissociates the visceral from the costal pleura; (3) Obstruction of the right bronchus; (4) Transposition of the viscera.

These points might be elaborated, but my time is short. I may say as to obstruction of the right bronchus, however, that it may be the most baffling of all the causes. Plugs of mucus, mucous polypi, bronchial stenoses, foreign bodies, diphtheria membranes, the pressure from without of aneurisms and lymph-nodes and mediastinal tumors—must at all times be considered. When the first three causes can be reasonably excluded and the heart cannot be found on the left side, transposition is a justifiable and highly probable diagnosis.

A conventional statement in the text-books requires brief notice here, namely, that vocal fremitus is less than normal in vesicular emphysema. Some years' personal study of emphysematous chests will convince the unprejudiced observer that it is not true. Simple dilation of the air-sacs with partial atrophy of their walls does not modify palpable fremitus to any serious degree either way. Of course these patients usually have a hoarseness due to chronic laryngitis, and this, it may be claimed, increases the quantity of vibration at its source. But comparison of the laryngeal and subclavicular fremitus in the way I have suggested will show normal relations.

An odd fact, so rarely noticed as to be a mere curiosity, is, that in old women and small anemic children with flabby tissues and soft trachea, the relation of right to left side may be changed by holding the patient's chin high and rotating the head to the left. This perhaps artificially compresses the right bronchus by traction and torsion of the windpipe.

A single additional note may be made in conclusion. Fremitus with a sitting or standing patient will be increased slightly if he lies down on a hard bed or table; lying on a soft bed makes no difference that after many trials I could ever notice with the unaided fingers.

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RESULTS IN DIFFUSE SEPTIC PERITONITIS TREATED BY THE ELEVATED HEAD AND TRUNK POSITION.

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FROM October 17, 1899, to January 17, 1904, Dr. George R. Fowler and myself have operated upon one hundred well-marked cases of diffuse septic peritonitis, resulting from inflammation of the vermiform appendix. We have not refused operation to any case, however desperate. Of these cases, 67 per cent. have resulted in recovery. The certainty with which the vast majority of cases of diffuse septic peritonitis, however treated, died in the past, is well known. Any method of treatment which will lower the tremendous mortality is worthy of consideration. It is with the purpose of bringing such a method to your attention that this paper is presented.

The technic employed in the treatment of these cases is as follows: The abdomen is entered through an incision not larger than is absolutely necessary to deal quickly with the primary focus of infection. All accessible infection is sponged away with stick sponges wrung out of a 1-3,000 bichloride solution. The primary focus of infection is isolated with laparotomy sponges wrung out of bichloride solution and removed. The immediate neighborhood is flushed with a solution made up of equal parts of peroxide of hydrogen and a saturated aqueous solution of bicarbonate of soda. This solution may be used slightly warm. The foaming peroxide-soda solution is washed away with saline solution at a temperature of 110° F. The neighborhood is then dried. Accessory collections of pus in the pelvis, under the liver and between coils of intestine are searched for, opened up, and irrigated in a similar manner. Finally a Chamberlain douche tube is placed in the pelvis and then in other parts of the abdominal cavity, and peroxide-soda solution introduced through it. The entire abdomen and pelvis is then flooded with hot saline, the Chamberlain douche nozzle being moved from one point to another. The intestines are at no time allowed to escape through the wound. The escape of the solution is facilitated by introducing the fingers into the wound.

The tubing conveying the saline should be of large caliber to allow of rapid flushing. The flushing with saline continues while the wound is being sutured. A large curved-glass drainage tube is introduced into the pelvis, its upper end emerging from the lower angle of the wound. There are numerous small fenestrations in the end of the tube. No other drainage is used unless there are necrotic abscess cavities in which case a wicking drain is placed therein and emerges alongside the glass tube. Finally the douche nozzle is withdrawn and the sutures tied. Eighty cases were so treated. In females drainage has in some cases been through a posterior colpotomy done from within the abdomen. In five personal cases I have relied upon this alone, closing the abdominal wound without drainage. In such cases the drainage tube is of very large caliber, of rubber, and through it are led numerous strands of wicking. This latter would seem to be the ideal way of treating such cases in females. In 22 cases, in place of a large glass tube in the pelvis, from 12 to 21 bundles of wicking or gauze strips have been led from various parts of the pelvis and abdomen to emerge from the lower angle of the wound.

The glass drainage tube is dressed independently of the wound. This is done by nicking a 12-inch square of rubber dam in the center, putting the rubber on the stretch and pressing the neck of the tube through the opening thus made. A narrow strip of gauze is passed to the bottom of the tube to act as a capillary drain. The upper

end of the strip is placed in the center of a yard of loosely rolled gauze. The edges of the rubber dam are caught up and tied so as to form a bag in which the gauze is enclosed. The wound is dressed with plain gauze held in place by adhesive plaster. The binder is split to allow the tube dressing to emerge. Thus pressure upon the tube is avoided and the tube can readily be aspirated and a fresh dressing applied.

Directly after operation the patient is placed in the elevated head and trunk position. This may be done by placing a chair or stool beneath the head-piece of the bed. At the German Hospital, we employ a frame consisting of two side supports and a central bar connecting the two. The side supports have each three holes at different levels into which the connecting bar may be introduced according to the height desired. This frame is secure and allows of different levels being employed. The elevation should never be less than one foot. A folded pillow is placed against the buttocks and through the fold of the pillow is passed a stout bandage which is tied on each side to the head of the bed. This allows the patient to rest comfortably and maintains his position without exertion on his part. Moreover, the knees being flexed relaxes the abdominal wall and this is always grateful to the patient. A saline enema is given every three or four hours for four to six times. If gas does not pass freely, a high enema of turpentine and oxgall is given. Strychnine and whisky are administered hypodermatically to combat shock. Fluids by the mouth are given ad libitum. The glass drainage tube is redressed every four hours and its contents evacuated. After three or four days, when the discharge is lessening, a smaller rubber tube is introduced through the glass tube and the glass tube withdrawn, leaving the rubber tube in its place. This is shortened from day to day and finally replaced by a strip of plain gauze.

Before our employment of the elevated head and trunk position in the after-treatment, we saved about 25 per cent. of this class of cases. For the reason that satistics of a few cases may be misleading, beyond a preliminary report of 13 consecutive cases of diffuse septic peritonitis with but one death,[1] we have reported no further results until the present, preferring to wait until we could show results in a sufficiently large number of cases to give a fairly true idea of the merits of the treatment. At the German Hospital we have operated upon 46 consecutive cases with but nine deaths, 81¼ per cent. of recoveries; at the M. E. (Seney) Hospital, 30 cases with 12 deaths, 60 per cent. of recoveries; at the Brooklyn Hospital 22 cases with 12 deaths, 45½ per cent. of recoveries.

Practically the only way in which treatment differed was in the drainage. Eighty cases were drained by placing a large glass tube in the pelvis. In some there was used supplemental gauze or wicking drainage for necrotic areas. Thirty of these cases died. One case was drained by a glass tube in the pelvis and a rubber tube through the posterior vaginal fornix. This case recovered. Five cases were drained per vaginam. Of these one died. Twelve cases were drained with multiple bundles of wicking or gauze strips. Two of these cases died. One case was drained through a rubber tube in the lumbar region, and recovered. One case was closed tight without drainage, and also recovered.

Of the 33 deaths, 17 occurred within twenty-four hours after the operation. These cases were profoundly septic and nothing could have saved them. On the second day, five cases died of profound sepsis, one of meningitis, one of lobar pneumonia. On the third day, four cases died of profund sepsis. On the fifth day one case died of septic pneumonia. On the eighth day one case died of septic ulceration of the stomach and general sepsis. On the thirteenth day one case died of meningitis and one of septic pneumonia and right-sided empyema. On the thirty-second day one died of septic endocarditis.

All the cases operated upon with one exception, even those which lived less than twenty-four hours, showed an immediate and decided improvement of the peritoneal condition. Vomiting was allayed, gas passed freely, distention diminished and they became more comfortable. The one exception was a case drained per vaginam who died on the second day of profound sepsis without any abatement of the peritoneal symptoms.

I would state the salient points in the treatment of these cases as follows: (1) A small incision and the avoidance of eventration; (2) thorough cleansing of the primary focus of infection and removal of the appendix. (3) Evacuation and cleansing of all accessory abscess cavities and the pelvis before washing out the peritoneal cavity. (4) A rapid systematic flushing of the peritoneal cavity with peroxide-soda solution followed by hot saline. (5) The continuance of the saline flushing until the sutures are placed, and for the most part tied. (6) The provision of proper drainage for the pelvis either by means of a large glass tube containing a capillary drainage strip emerging through the lower angle of the wound or, in females, by a large caliber rubber tube filled with wicking passed through a posterior colpotomy incision. (7) The drainage of accessory abscess cavities with gauze or wicking. (8) The elevation of the head of the bed to accelerate the drainage of septic fiuid into the pelvis where it can be removed through the glass tube or, in case of vaginal drainage, find a ready exit.

[1] These cases were reported in the *Medical Record* for April 14, 1900, and January 16, 1900. With two exceptions the peritonitis followed appendicitis. The two exceptions were due, one to a ruptured ovarian cystoma with a twisted pedicle, the other followed an operation for ventral hernia and was probably due to infection in a heavy strand of catgut. The fatal case developed meningitis on the eleventh day following the operation, and died on the thirteenth day. The peritoneal symptoms had subsided.

Philadelphia Hospital Examination.—At the recent examination of candidates for resident physicians, 41 of the 85 applicants made the required average of 70 per cent. Of the 19 highest on the list who will be appointed to fill regular vacancies, University of Pennsylvania has 16, Jefferson 2, and Medico-Chirurgical 1.

TWO APPLIANCES TO FACILITATE EYE AND THROAT WORK.

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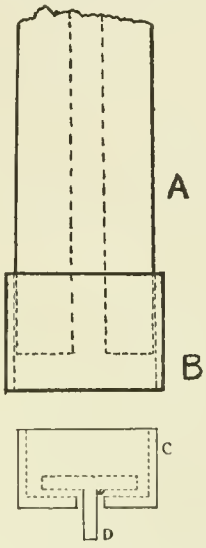
Any device which aids in medical practice must depend for success upon its paramount utility. So, the two appliances, herewith depicted will have their fate decided by their ability (or lack of it) to fill a long felt want.

The first appliance is a shield to prevent disagreeable and annoying reflections from the posterior surface of trial lenses used by oculists to determine refraction. For many years I have been bothered by patients complaining that the glasses were "dim," looked "smoky," or objects behind or at the side were seen by reflection in the glasses. Most oculists have their patients sit near a window and the reflection of the window-sash, curtains, or objects out-of-doors is quite sufficient to distract the patient's attention and so prevent a proper fitting of the glasses, besides taking time and trying the temper of the physician by the uncertain answers. Usually it has been sufficient to have the patient hold the hand or a card at the side of the head corresponding to the eye which is being tested, but this becomes tiresome during a long examination, and is even impossible to stout persons. Finally, the difficulty was solved by having a pair of shields made connected by a curved steel spring long enough to go over the patient's head and adjusted so as to clasp the head firmly without undue pressure. The wings or shells are made of aluminum, blackened and measure 4 by 6 inches. The part of the shield which comes in contact with the head is padded so that no discomfort is caused. The pads usually rest on the temporal region just above the zygomatic process in front of the ear.

The shield is made in three parts, the wings being attached to the spring by thumb screws and one or both wings may be used at a time. Of course it would be impossible to use this device on women wearing hats, but as it is quite impossible to examine the eyes with the present style of wide-brimmed hats, their removal before the examination becomes necessary and no obstacle is offered to its use. The shield (Fig. 1) was made for me by Gall and Lembke and might be called an oculist's reflex shield.

In using sprays to treat diseases of the larynx or nasopharynx an appreciable length of time elapses between the opening of the air valve by the thumb of the operator and the actual issuance of the fluid from the tip of the instrument. This is particularly the case where aspiration is the principle employed; *i.e.*, a stream of air passing over the mouth of a tube exhausts the air from it, creating a partial vacuum, and fluid from the receptacle into which the tube is placed is forced upward by atmospheric pressure. The larger and longer the tube the longer interval before the fluid emerges, and the weaker the air pressure used to



exhaust the tube. Where the air pressure is applied directly to the surface of the fluid in an air-tight receptacle the interval is not so great, but is still appreciable. The column of cold air (especially in the former instrument) with perhaps a few drops of fluid causes the patient to gag. When the larynx is closed or the soft palate is retracted against the posterior wall of the pharynx, an effective cleansing or medication of the parts becomes impossible. The spray may be made practically instantaneous and the parts treated before the spasm occurs by having the tube already filled with the desired fluid. This may be accomplished by placing a valve at the lower end of the tube which rests in the fluid and so preventing that in the tube from returning to the general body of fluid in the receptacle.

A sleeve (B) is made which is fastened to the spray-tube (A) by wax or other material, and the valve seat (C) is provided with a high rim or collar which fits snugly over the part B, the latter being slightly beveled from above downward.

The Valve D is ground accurately to the valve seat and is provided with a stem, triangular in cross-section, which passes through a circular opening in the valve-seat, thereby permitting the fluid to flow freely upward during use. The valve is made sufficiently small to permit fluid to pass around it into the tube above and raises slightly during use, but when the air pressure is removed the valve drops back into its seat and the fluid is retained in the tube.

This attachment may be made of brass or bronze (silver or gold-plated to prevent attack by the medicaments used), glass or aluminum. The latter answers well for general purposes. Only slightly greater air-pressure is required to operate the spray tube with the valve attached than without it.

It may be objected that this device is unnecessary as in spraying the post-nasal space a palate-retractor may be employed, but its use is unpleasant without cocaine and the latter is also unpleasant, if not dangerous.

I am indebted to Mr. John T. Hoyt, of the Physiological Laboratory, College of Physicians and Surgeons, for his kindness in making this attachment.

63 West Fifty-sixth Street.

A STUDY OF THE TUBERCULOSIS PROBLEM IN NEW YORK CITY.[1]

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It is impossible to discuss all the many phases of this subject within the limits of any one paper. The object of this present study is to deal with those aspects of the tuberculosis problem which are of practical interest and importance to the physician, as he actually meets with tuberculous patients in private or dispensary practice among the poor of New York City—meaning by that, only the Boroughs of Manhattan and Bronx.

Among physicians there are two distinct, and almost diametrically opposite, points of view in regard to this disease when it occurs among the poor. The first is that of the comparatively few men who are interested and actively engaged in the study and treatment of this disease under such conditions; and we find them optimistic, even enthusiastic in regard to it. The other viewpoint is that of the indifferent, or pessimistic, and is, I am forced to believe, that of the majority of the members of our profession.

It is enthusiasm arraigned against indifference. Both will probably need modification before the true position is reached. The cooling of enthusiasm, however, is an easy process; but the warming up of indifference is a more difficult task. It is, nevertheless, for this latter end that we are interested in this present discussion.

Upon the surface, it seems strange that there should be any such indifference, but, on closer inspection, I think that we can trace its origin to the medical school, where we are interested because of the variety of physical signs presented by this disease, but where this interest is checked, by the impossibility of following the results of any continued form of treatment; through the hospital, where our consumptives are recognized only to make sure of a rigorous exclusion, and so any study of this disease is impossible; to the dispensary, where we are immediately overwhelmed by the numbers of these patients, who look to us to help and to cure them.

These patients often live in dark, dirty overcrowded rooms; their food is poor, insufficient and badly cooked; and in order to live, even in this fashion, they must, as a rule, do hard and confining work. These are discouraging conditions under which to apply our modern notions of the treatment of tuberculosis, depending, as it does, upon plenty of light, good air, nourishing food and rest. It is therefore not so surprising that few or no attempts are made so to apply them, and consequently these patients almost invariably do badly and are looked upon as sad, chronic, hopeless cases.

This is the tuberculosis problem in the practical form that it presents itself almost daily to each one of us. It is our present object to throw some light upon this problem, and perhaps to offer some encouragement for the hope of its ultimate solution.

Such a result can perhaps best be accomplished (1) by a brief description of the existing institutions and agencies which have an influence upon this subject; (2) by a demonstration of the way in which physicians may utilize these institutions to meet indications arising in various classes of cases; and (3) by an indication of the extent of our responsibilities toward these patients.

For convenience, these different institutions may be divided according to their functions into: (1) those for education and prevention; and (2) those for treatment.

INSTITUTIONS FOR EDUCATION AND PREVENTION.

The *Health Department* of the city deserves first mention here, both on account of the importance of its work and because of its priority in this field, in point of time. Just ten years ago, the first resolutions were adopted, involving the reporting to the department of certain classes of cases of tuberculosis. This resulted in increased opportunities for inspection and observation, as well as for the distribution of information concerning this disease, by means of oral and printed instructions and advice. The number of cases thus reported increased very rapidly, and the campaign of education grew more extended in proportion, until in 1897 an amendment to the Sanitary Code was adopted, declaring "pulmonary tuberculosis to be an infectious and communicable disease, dangerous to the public health," and making it compulsory for every physician to report all such cases, in the manner now well known and generally observed.

Although this was only seven years ago, it is difficult for us now to realize the general storm of disapprobation which this ruling aroused, even from many of the leading physicians of the city. But, in the light of our present knowledge, I think that it is no exaggeration to say that, directly or indirectly, no single influence has been so potent in bringing home to the community—physicians and laity alike—the nature of this disease, and the means by which its ravages may be success-

[1] Read before the Quiz Medical Society, February 13, 1904.

fully resisted. The scientific soundness of this section of the Code is now universally admitted and it stands to-day unchanged, excepting that all forms of tuberculosis, as well as the pulmonary forms, are now included. The growth of this work is shown by the increase in number of cases reported from 4,166 in 1894, to 13,383 in 1902.

In addition to the educational features of this work already mentioned, there are the visits of the inspectors, who report the conditions prevailing in the homes, as regards light, ventilation, cleanliness, overcrowding, general sanitation, and precautions taken to prevent the spread of infection, etc. They instruct the patient and his family, both verbally and by circulars, in the danger and manner of infection and in the proper disposal of the sputum, and sputum cups are provided for those who cannot afford to procure them for themselves. More recently, trained nurses have been ultilized with great success in this work, especially for the care and observation of the more advanced cases.

Considerable educational value is also attached to the free examination of sputum made by the Health Department, in the emphasis thus placed upon the value as well as the limitations, of this form of investigation. In 1903, over 11,000 specimens of sputum were thus examined.

All of these educational means, of course, make also for the prevention of this disease; but, in addition, must be mentioned the prohibition of spitting in public places and conveyances, the disinfection of rooms after death or removal, and the compulsory removal of those who, either wilfully or for other reason, neglect the proper care of their sputum and consequently are a serious menace to the health of their associates.

The department points with justifiable pride to the results of the foregoing methods of procedure, as shown by the reduction of mortality from tuberculosis. In 1881 the death rate from this disease was 4.2 per 1,000. In 1902 it was 2.29 per 1,000, a reduction of over 40 per cent. Of actual deaths from consumption there were 5,312 in 1881, and only 4,893 in 1902,—418 less deaths, although the population had increased over 700,000.

Such, very briefly, has been the noble work of the Health Department, and it is no more than simple justice to add that it represents practically the efforts of a single man, Dr. Hermann M. Biggs.

The Charity Organization Society must next be considered in its relation to this subject. In June, 1902, its Committee on the Prevention of Tuberculosis held its first meeting, and the following September began its active work. This work is best described by quotations from the statement by this Committee of its own objects.

1. "Research into the social, as distinct from the medical aspects of tuberculosis, for example, into the relations between the disease and overcrowding, infected tenements and unhealthy occupations, and also into the influence upon recovery of improved diet and hygienic living."

During the past year the results of this part of the committee's work are shown in a very comprehensive article by Miss Lillian Brandt, on the "Social Aspects of Tuberculosis," and another by Homer Folks, late Commissioner of Charities, based upon the social history of 1,000 cases in the Phthisis Infirmary of the Metropolitan Hospital.

2. "Education. The publication of leaflets and pamphlets, the giving of lectures, and the promulgation in every possible way of the fact that tuberculosis is a communicable and preventable disease; the widest distribution of the results of scientific research in this field and of the results of modern treatment, both in sanatoria and at home."

This part of the work has been well done. Last winter 81 lectures were given by physicians in various schools, clubs, churches, settlements, etc., in five or six different languages, with an aggregate attendance of 8,700. Other more scientific lectures were delivered at the United Charities Building, and copies of these lectures, with much other educational literature of a popular nature, have been widely distributed.

3. "The encouragement of movements for suitable public and private sanatoria, both for advanced and for incipient cases; for adults and for children; for free care, and also for the care of those who can pay moderate fees."

Under this category comes the activity of this committee in attempts to influence legislation:—twice successful in the recommendations for the establishment of a State Sanatorium and a Municipal Sanatorium, respectively, and once unsuccessful in the efforts to prevent the passage of the Goodsell-Bedell law, which is considered to be almost prohibitory of the establishment of any sanatoria for tuberculosis in this State.

4. "The relief of indigent consumptives by the provision of suitable food and medicine; by the payment of rent, when this is necessary to secure adequate light and air; and by transportation and maintenance at a distance, when, in the judgment of the committee, this is essential."

A good deal of attention has been paid to this feature of the work. For five months all applicants to the Charity Organization Society, where the necessity for relief was caused by tuberculosis in the family, were referred to the Central Committee and, where investigation proved its desirability, relief was given in the form of rent, fuel, special diet, medicine, etc. Provision was thus made for 211 families, and the expense incurred was $1,000 a month. In April, lack of funds, as well as convenience of administration, made it necessary to turn this work back into the hands of the committees of the various districts, and the work of relief is still being carried on by them; but lack of funds curtails its efficiency to a certain extent. The interest taken by the Charity Organization Society in these cases is, however, very great, and this society and its committees constitutes, at the present time, one of the most efficient and potent forces now at work in this city toward the solution of the tuberculosis problem.

The *United Hebrew Charities* has also approached this problem in a most practical and efficient way. It likewise has its special Committee on Tuberculosis, which began its work in January, 1902, several months before that of the Charity Organization Society, and its objects and methods are best described by quotations from its own report:

"The methods made use of by the committee may be classified under the following general headings: (*a*) The placing of applicants in charge of a special agent. (*b*) Careful medical examination to secure a correct diagnosis. (*c*) Instruction of consumptives by means of pamphlets, tracts, etc., and, in particular, by verbal guidance, with special reference to the disposal of sputum, cleanliness of person and home, proper diet and exercise, cessation of unhealthy occupation, removal to more sanitary neighborhood, and, in general, following out the recommendations of the Board of Health. (*d*) Securing the most desirable medical treatment; where possible, in sanatoria. (*e*) Supplying necessary food, such as eggs, meat, etc., in sufficient quantities, and, in particular, an abundant supply of good milk. (*f*) Where change of climate was indicated by the medical examination, granting transportation to points desired. (*g*) Securing, particularly for the improved consumptive, out-door work and, where possible, positions in country towns. (*h*) Friendly visiting."

The general similarity between this work and that of the Charity Organization Society is apparent but considerable advantage is gained by the United Hebrew Charities in the fact that the administration of it is in more compact form and that it has more adequate means at its disposal. Less attention is paid to a general campaign of education and more is done for the individual patient. In fact, it is open to question whether some of this work does not belong more properly to medical jurisdiction; but, if so, criticism should be made rather of us who have neglected it, than of the institution which has taken it up.

The comparatively small number of consumptive Hebrews, the relatively adequate supply of funds, and the close association with the Bedford Sanatorium and the National Jewish Hospital, of Denver, are factors which combine to make this work of the United Hebrew Charities remarkably efficient, and one is compelled to admire the enthusiasm and thoroughness with which this, as well as most other Hebrew charities, are conducted.

Similar to the work of the Charity Organization Society and the United Hebrew Charities, but confined to the assistance of the patients and their families in their homes, is the work of the *Association for Improving the Condition of the Poor.*

This association investigates and relieves the necessities of all suitable cases that are referred to it. This relief includes the payment of rent, the provision of food, coal, etc., and for tuberculosis patients the supply of extra diet, in the form of milk and eggs in abundance. There are at present 300 families under the care of this association, in which the cause of dependence is tuberculosis. The assistance thus given is of the greatest value, and the manner in which this work is carried on is most efficient.

The New York Diet Kitchen Association has seven kitchens or depots, in various parts of the tenement districts. From these kitchens are distributed milk and other forms of simple diet among the sick poor, upon requisition of the physicians of certain dispensaries. Although somewhat in need of funds, they are able to supply milk to many tuberculous patients, and stand ready to help as many more as their means will allow.

The Nathan Straus Milk Depots are also available for a certain number of these patients, although primarily intended for the use of infants and children. These depots are situated in convenient parts of the city, and tickets for milk may be obtained by application to Mr. Straus.

There are numerous other smaller relief agencies in New York, the greater number of which are connected with the various churches. Important among these may be mentioned the St. Vincent de Paul Society, St. Bartholomew's and St. Thomas' churches. Special diet and other assistance may be obtained from them, but it is usually better and more satisfactory to make application for such through the medium of the Charity Organization Society.

Another most important factor in the tuberculosis problem is the *Reform of the Tenements.* The beginnings of the present movement were in 1900, when the New York State Tenement House Commission was appointed, largely through the activity of the Charity Organization Society. This commission studied the whole tenement question thoroughly in every detail, and subsequently practically all of its recommendations were adopted by the legislature and became laws in 1901.

As one result of the new laws, the Tenement House Department was instituted as a separate part of our municipal government on January 1, 1902. Robert W. DeForest and Lawrence Veiller, who had been President and Secretary of the Commission, were appointed Commissioner and First Deputy Commissioner, respectively, of this new department, so that the execution of the laws was placed in the hands of those who had framed them.

The importance of this subject to our present discussion is well recognized, and is apparent from the fact that the great mass of the 20,000, and more, tuberculous persons in this city live in the tenements, and that it is in these tenements that the conditions which we now believe to be most essential for the prevention and cure of tuberculosis—namely, light, air and cleanliness—have previously been unknown and impossible.

The evils of the tenements have thus been summed up in the report of the commission: "Insufficiency of light and air, due to narrow

courts or air-shafts; undue height and the occupation by the building or by the adjacent buildings of too great proportion of the lot area; danger from fire; lack of separate water closets and washing facilities; overcrowding; foul cellars and courts; and other like evils, which may be classed as bad housekeeping."

The present law attacks these evils in three ways:

1. *By the New Tenements.* These must be so built that there is light and ventilation for every room. The air shaft is abolished and the size of courts increased. The height of buildings and proportion of lot space to be occupied are diminished. The halls have windows opening upon large courts, and each family has its own water-closet within its own apartment.

2. *By Altering the Old Tenements.* The main evils here were the dark interior rooms, the dark halls and the common privies, or "school sinks" in the yards. Investigation showed that there were 350,000 dark interior rooms with no windows, in New York. These must now be fitted with large interior windows in the partitions separating them from the outer rooms, thus providing considerable light and air. "School sinks" have been abolished and closets placed upon each floor. The halls must be light enough for an ordinary person to read in any portion of them, and this may be accomplished by windows to the outer air or glass panels in the doors leading to the rooms.

3. *By Adequate Supervision.* This is obtained by careful and constant inspection, to secure the enforcement of the laws. By the combination, in a separate department, of the duties which had previously been divided between the Health, Building, Fire and Police Departments, this supervision has been made possible and practicable, and it is now being consistently exercised.

Attention must also be called to the recommendations of the Tenement Commission in regard to the establishment of small parks in crowded tenement districts to replace unsanitary houses, and to the institution of public baths, playgrounds and recreation piers. A beginning has already been made in these directions, and each one of these improvements has a direct bearing upon our present subject.

Dr. Hermann Biggs thus comments upon the relation of the tenement house to tuberculosis: "There has been a reduction in the mortality from the tuberculous diseases in New York City since 1886 of 35 per cent., and I have no hesitation in saying that I believe, with a complete and efficient scheme for dealing with pulmonary tuberculosis, in the housing of the tenement house population, suitable hospital accommodations and the proper enforcement of precautionary measures, the death rate from the tuberculous diseases in New York City may be further reduced one-third within a period of five years. This would mean a saving of 3,000 lives annually. No other measures offer promise of such large returns in the diminution of suffering and death as those which look to the prevention of tuberculosis in the tenement houses."

Because of the great amount of comment and criticism caused by the action of the Marine Hospital authorities, in classifying tuberculosis as a "dangerous, contagious disease," and therefore excludable under the immigration laws of this country, it may be of interest to note the actual results of this ruling.

From July 1, 1901, to December 31, 1903, a period of two and one-half years, during which this law has been presumably operative, 27 aliens have been certified at Ellis Island as suffering from pulmonary tuberculosis, and of these 19 were deported. As the total immigration at the port of New York during that same time was 1,421,853, it is evident that this exclusion has had no appreciable effect upon our tuberculosis problem.

This completes our review of the more important agencies active in education and the prevention of tuberculosis in New York. We will next consider

THE INSTITUTIONS FOR TREATMENT.

Of these institutions there are three classes: (1) Sanatoria; (2) Hospitals; (3) Dispensaries. The sanatoria and hospitals we will review in bare outline. The dispensaries we will consider more carefully, as having a more immediate bearing upon our especial topic.

Sanatoria.—1. The Adirondack Cottage Sanitarium, sometimes known as the Trudeau Sanatorium, situated at Saranac Lake, N. Y. Capacity, 100. Early cases only. Charges $5 a week. Admission through examination. Examining physicians in New York City: Drs. James, Janeway, Loomis, Trudeau, Jr., and Miller.

2. The Loomis Sanatorium, Liberty, N. Y. Capacity, 135. Main building, 100. $10 to $25 a week. Any cases not bedridden. Admission by application to Resident Physician. Charitable Annex, 35; $5 a week. Early cases. Admission through examination by Dr. Loomis.

3. The Montefiore Country Sanatorium, Bedford Station, Westchester County, N. Y. Capacity, 160. Early cases. Free. Application and examination at Montefiore Home from 11 A.M. to 1 P.M. daily.

4. Stony Wold Sanatorium, Lake Kushaqua, Adirondacks, N. Y. Capacity, 60. Early cases, in working women and children, including boys up to twelve years of age. Free. Application to Mrs. James E. Newcomb, and examination by any member of Medical Board.

5. The Sanatorium Gabriels, Paul Smith's Station, Adirondacks, N. Y. Capacity, 100. Early cases. $10 to $18 a week. One case in every ten, free. Application to Sister Superior, accompanied by any physician's certificate.

6. The National Jewish Hospital for Consumptives, Denver, Colo. (This is mentioned because 50 per cent. of its patients come from this city.) Capacity, 85. Free. Early cases only. Application and examination at United Hebrew Chari-

ties Building on second and fourth Mondays of each month, at 10 A.M.

The total sanatorium capacity is thus 640. Of course only a portion of this number (perhaps one-half) represents the available accommodation for New York City. It will be noted that for the poor there is accommodation only for early cases. All of these sanatoria have a long waiting list and it is useless to make application for patients in even moderately advanced stages of tuberculosis.

Hospitals.—1. Tuberculosis Infirmary of Metropolitan Hospital, Blackwell's Island. Under Department of Charities. Opened February 1, 1902, through activity of Commissioner Homer Folks. Capacity, 450. 350 in buildings and 100 in tent cottages, which are a great feature of the institution. Admits all stages of disease. Admission by physician's recommendation to Superintendent of Out-door Poor, foot of East Twenty-sixth Street. Boat leaves 10 A.M. and 3.30 P.M.

2. Seton Hospital, Spuyten Duyvil, N. Y. Under Sisters of Charity. Capacity, main hospital, 200—men only. Annex called House of Nazareth, for women and children, accommodates 180, making total capacity of 380. Admits all stages of disease. Admission through Superintendent of Out-door Poor, and city pays for board of each patient thus admitted.

3. St. Joseph's Hospital, East One Hundred and Forty-third Street and St. Anne's Avenue. Under Sisters of St. Francis. Capacity, 350, with 15 beds for children. All stages of disease. Application with physician's certificate at the hospital at any time, or through Superintendent of Out-door Poor.

4. Riverside Hospital. North Brothers' Island, under Department of Health. Capacity, 60. Admits all stages. Application through Health Department, who will compulsorily remove any case considered dangerously infectious.

5. House of Rest for Consumptives, Inwood-on-Hudson. Capacity, 35. Designed as a refuge for incurable cases. Admission by application to the Attending Physician, Dr. Linsly R. Williams. (This is the organization that for about ten years had its patients in St. Luke's Hospital.)

6. Lincoln Hospital, East One Hundred and Forty-first Street and southern Boulevard. Has two phthisis wards. Capacity, 40 beds. Admits all stages. Application at hospital or through Superintendent Out-door Poor.

7. Montefiore Home, Broadway and One Hundred and Thirty-eighth Street. Has phthisis wards accommodating 45. For advanced cases. Application at the Home between 11 A.M. and 1 P.M.

8. Bellevue Hospital. Has two phthisis wards accommodating 40 patients. They are for cases developing in the regular wards, and others who are too sick to be transferred to Blackwell's Island.

9. In Brooklyn. The Brooklyn Home for Consumptives and the Kings County Hospital receive tuberculosis patients, but with them we are not now immediately concerned.

All of these hospitals are entirely free. The male wards are overcrowded during the winter, but there is always room for women.

The Seton, Riverside and Metropolitan hospitals are fairly well adapted for the treatment of early cases. The others are better fitted to care for advanced and more or less hopeless cases. The Seton Annex, or House of Nazareth, is an excellent place for children.

The total hospital accommodation is 1,400.

Summary of Beds.—

SANATORIA.		
Montefiore, at Bedford	160	
Loomis	135	
Adirondack Cottage	100	
Gabriels	100	
National Jewish Hospital	85	
Stony Wold	60	640
HOSPITALS.		
Metropolitan	450	
Seton	380	
St. Joseph's	350	
Riverside	60	
Montefiore Home	45	
Lincoln	40	
Bellevue	40	
House of Rest	35	1,400
Grand total		2,040

There are prospects in the near future of an increase in these accommodations in the following ways: (1) by the opening of the State Hospital at Ray Brook, Adirondacks, N. Y., which is nearing completion; (2) by the erection of a Municipal Sanatorium, upon which favorable action has already been taken by the city authorities, but the selection of a suitable site is hindered by the provision of the Goodsell-Bedell law to which allusion has already been made. (3) The Free Masons have a plan on foot to erect a sanatorium for the tuberculous members of their order. (4) The Association for Improving the Condition of the Poor is about to erect a sea-side sanatorium for children near Coney Island.

Dispensaries.—1. Presbyterian Hospital. Several years ago Dr. Shively, at the Presbyterian Hospital Dispensary, recognized the importance of especial attention to the dispensary cases of tuberculosis, and considerable interest has been taken in these cases there, although no regulation of their home surroundings has been attempted.

2. Post-Graduate Hospital. At the Post Graduate Hospital, Dr. Russell has been carrying on a very careful and successful system of management of a considerable number of tuberculous out-patients. His general plan is one of superalimentation with milk and eggs (sometimes as high as 5 quarts of milk and 18 eggs a day) with very free daily catharsis ℥i to ℥iv of castor oil, supplementing this with an emulsion of mixed fats, and, where possible, with a month of preliminary treatment in bed, upon a strictly milk

diet. This class is limited to those who are able to afford this extra food, the cost of which is considerable, and the scope does not extend to systematic supervision of the home life.

The value of this work has been very great in demonstrating the practicability of the successful treatment of pulmonary tuberculosis in New York City, even in advanced cases.

3. Vanderbilt Clinic. About January 1, 1903, through the support and cooperation of Dr. James, there was instituted at the Vanderbilt Clinic, under the writer's supervision, a system of more careful management of these cases of tuberculosis than had before been customary. The main points in this system are special histories and regular weekly records of these cases, detailed oral and printed instructions in regard to this disease, free distribution of sputum pouches, and a visiting nurse, who makes written reports of the home conditions and cooperates with the physician to make these conditions conform as far as possible to the hygienic requirements for the treatment of this disease. Through this visiting in the homes, it is possible to supplement the dispensary treatment and to recognize the need for charitable assistance or hospital care. In other words, each patient is followed up and every effort is made to make use of the different agencies for helping them of which we have already spoken. At the Vanderbilt Clinic this work is done as a part of the regular duties in the Division of General Medicine, and there is no separate class for tuberculosis. Of late, it has been supplemented by arrangements for visiting nurses from the training schools of the Presbyterian and Roosevelt Hospitals, and the general management is now in the hands of Dr. Linsly R. Williams.

4. Bellevue Hospital. A few months ago it was proposed by the President of the Board of Trustees of Bellevue and allied hospitals, Dr. J. Winters Brannan, to take up this special tuberculosis work in connection with the out-patient department of these hospitals. The task of organization was put in the writer's hands, and about the middle of December last a special tuberculosis class was started in the Bellevue Hospital Out-Patient Department.

The general plan is the same as at Vanderbilt, but more adequate resources have made its elaboration possible. All the means spoken of in connection with Vanderbilt Clinic are made use of, and, in addition, arrangement has been made for the supply of milk and eggs from the hospital store, as a part of the treatment. Besides this, there are now being erected upon the hospital grounds, tent cottages for the use of such patients whom it is desirable to keep in bed, under observation, for awhile, or for whom a few weeks' training in habits, mode of life, etc., seems advisable.

Also, the close proximity of this hospital to the office of the Superintendent of Out-door Poor makes the use of the different hospital facilities at his disposal a very easy matter. The nursing is done by the pupil nurses of Bellevue Hospital, under the direction of a head nurse with large experience in district visiting. In the medical work, able assistance is rendered by Dr. Haven Emerson and Dr. E. L. Trudeau, Jr.

I think it is no exaggeration to say that this system gives to Bellevue Hospital the distinction of sharing with the Phipps Institute of Philadelphia the honor of possessing the most adequate means of dealing with the consumptive poor in their homes that exists in this country.

5. The Health Department Dispensary. The Health Department has erected a special dispensary for tuberculosis, modeled after those of France. This is a separate building, with different rooms for consultation, examination, throat and X-ray work, and all the requirements for the diagnosis and treatment of such patients. This dispensary is very shortly to be opened, and in connection with it will be used all the splendid and extensive organization of this department in regard to home inspections, visiting nurses, printed circulars, hospital accommodation, etc. There will be evening classes, which will be of very great value to such patients as are able to work, and therefore cannot attend regularly at the usual dispensary hours. The promise of this institution is very great, and its usefulness and value to the community will add considerably to that of the Health Department, great as we have already seen that to be.[1]

As far as I am aware, this completes the list of dispensaries in this city which attempt a satisfactory treatment of their tuberculous patients. Now that the practicability of such treatment has been established, it could easily be undertaken, in some measure, at least, by every dispensary. Just as soon as that condition of affairs obtains, the ultimate solution of our tuberculosis problem is very near at hand.

MANAGEMENT OF DIFFERENT CLASSES OF CASES.

Differences in several conditions modify this management.

1. *Stage of Disease.* Whether early, moderately advanced, or far advanced.

2. *Economic Conditions.* Such as ability to work, confinement to bed, and the resulting conditions of self-support, or complete or partial dependence upon others.

3. *The Character of Housing.* Whether in lodging or furnished room houses or in tenements; and whether these tenements are passably sanitary or totally unsanitary.

Patients in the early stages are generally able to work, and therefore self-supporting. But this work is often too arduous and very harmful to the patient. This condition of affairs should not be allowed, if possible. Change to more favorable occupation should be effected, or the patient should be sent away to some suitable sanatorium or rural hospital. These are the cases whom we

[1] At the time that this article was written the writer was ignorant of the admirable work of the Tuberculosis Clinic at the Gouverneur Hospital. This has been in operation since July, 1903.

may reasonably hope to improve or get well, and very careful assistance should be given to them, to let them at least have a fair opportunity. It is not fair to advise them to go to the country or to change their work, and then dismiss all responsibility toward them. It is generally absolutely impossible for these people to follow this advice, unless assistance be given them. This can very often be obtained from some of the charitable institutions we have considered. If they stay home, we should look after their home conditions and in some way provide extra nourishment, for this is *the treatment* of the disease, and we, as physicians, are responsible for it. It has been a matter of great surprise and encouragement to me to note how often these patients do well under the dispensary management such as we have described, and during the past year not a few cases of arrested disease have been noted.

The Moderately Advanced Cases require the greatest judgment and skill. As a general rule, they should not work. The question of hospitals immediately comes up, and Seton, Riverside and Metropolitan are the ones best adapted for these patients. The patients of this class should never be sent far away from home, unless ample provision is made for their support in every contingency. Too often, a burst of charity sends them to the Adirondacks, or elsewhere, and leaves them stranded there, an additional burden upon an already overtaxed community.

Unwillingness on the part of the patients, or lack of room in the hospitals, usually makes this method of disposal unavailable, and, as they cannot or should not work, they, with their families, must become either partially or wholly dependent upon outside assistance, in order to live. As in these cases there is still some good hope of improvement, extra nourishment and sanitary surroundings must be added to the bare necessities of living. It is in these cases that the various agencies of relief are of the greatest benefit.

Where there is any question of the actual necessity for outside assistance, the case should be referred to the Charity Organization Society or the United Hebrew Charities for investigation as to the resources, family connections, past record in habits, thrift, etc., before indiscriminate help is given. This question being satisfied, the case may either be left in the hands of one of these organizations to provide necessities and extra food, or this assistance may be obtained directly from other relief agencies, such as the Association for Improving the Condition of the Poor, the different church charities, the diet kitchens, the Straus milk depots, etc. This help should always be given, however, under medical supervision, in order that the needs of each patient may be properly supplied and in order to insure to these different societies the distribution of their help in such manner that it will do the greatest amount of good.

All Advanced Cases are better cared for in suitable hospitals, and to secure their admission should be our first endeavor. This is particularly true of bed-ridden cases, for whom, of course, dispensaries cannot provide, and whose progressive weakness and loss of feeling of responsibility make the proper care of the sputum impossible. If such patients persistently refuse to go willingly, they should generally be referred to the Health Department for compulsory removal.

Cases not sent to hospitals must be watched carefully, especially by nurses, and distressing symptoms relieved. On account of the insufficient supply of extra food available for more favorable cases it is our usual custom to withhold this part of our treatment from cases evidently hopeless.

Differences in Housing Conditions affect the management of all three classes of patients. Light, clean, well-ventilated tenements can readily be converted by an intelligent nurse into very fair home sanatoria. When such homes are found, it influences considerably the decision upon the necessity for hospital care.

Unsanitary tenements, however, must not be so used. Either the family must move to more favorable quarters or the patient must go to a hospital or sanatorium. The moving may be effected by financial aid from the Charity Organization Society, the United Hebrew Charities or the Association for Improving the Condition of the Poor, when such assistance is necessary. If any violations of law exist, they should be reported to the Tenement House Department, and the Health Department should be notified of the removal, in order to disinfect the premises.

Lodging-house cases and many furnished-room cases may be removed to hospitals by authority of the Health Department, and this should be done. It is impossible to exercise any supervision over such cases from the dispensary. They come back for observation very irregularly, the nurse cannot find or follow them, and therefore home instruction is impossible. These patients, floating about from one lodging-house to another, with no fixed abode or sense of responsibility to their fellows, constitute one of the most prolific causes of the spread of this disease, and one that it is impossible to counteract, as long as they live under such conditions. The welfare of the community demands and justifies their compulsory removal and retention in suitable hospitals.

This completes our review of the possible methods of management of these cases of tuberculosis among the poor. My ideas concerning our responsibilities, as physicians, toward them are already apparent. We must treat these patients properly, and follow up this treatment to its logical conclusion.

To tell them to go to the country is simply a waste of breath. To simply prescribe medication, is to give a "stone," when their need is for "bread." To advise fresh air, good food and light work, without providing these things, is a hollow mockery.

The proper treatment of these cases involves,

as we have seen, a great expenditure of time, thought and skill, in directions including the entire social, as well as physical condition of the patient. The dominating control of all phases of this treatment should not be delegated to any charitable society, but should lie with the patient's physician. In order to hold this effectually, this physician must study and understand all the underlying conditions, which we have seen to be much more complex than simply those of physical signs and medication.

It is true that there is great advantage to be derived from better knowledge of the social aspects of any disease, but in none is this knowledge so essential, or its application so remunerative, as in tuberculosis. Thinking men of experience are coming more and more to the agreement that, under proper conditions and proper management, tuberculosis is a preventable and curable disease in any climate, even in that of the City of New York; and to any who care to study and to understand this disease, the prospect of success seems brighter than in any other of the great problems of preventive medicine of to-day.

It would be impossible for anyone to study this tuberculosis problem without being deeply impressed with the tremendous influence that has been exerted upon it for several years by the untiring efforts of two men. These men are Dr. Hermann M. Biggs and Dr. S. A. Knopf. In every phase of a most difficult struggle they have stood together, and often alone, with both profession and laity combined against them. But, by steadfast adherence to their firm convictions, they have accomplished many of their ends, and in so doing, have placed this whole community under a lasting obligation to them.

I cannot more fittingly close this discussion than by expressing the sincere wish that at least some of the spirit of their energy and enthusiasm in this vital question may be infused into each one of their fellow-practitioners here present.

The writer wishes to express his indebtedness for much information to the officers of the various institutions here considered and also to "A Circular to Physicians," issued by the Health Department, "A Handbook on the Prevention of Tuberculosis," published by the Charity Organization Society and *The Tenement House Problem*, edited by DeForest and Veiller.

550 Park Avenue.

The Action of Nicotine.—In studying the nicotine tolerance in rabbits, R. A. Hatcher (Am. Jour. Physiol., April 1, 1904) found that this poison is very uncertain in its action. While death is due to failure of respiration, artificial respiration, if effective at all, must be begun before the centers show evidence of marked depression. The stimulating effects of heat are undoubtedly useful in combating the toxic effects. No cumulative effects can be seen when nicotine is given daily for several days. Nutritional disturbances follow its prolonged use, by the appearance of ulcers at a point some distance from the seat of injection, disappearing with the cessation of its use, and reappearing upon resumption. No antitoxic serum has been found.

A REMARKABLE CASE OF GASTRIC CANCER: SEPARATE INVOLVEMENT OF CARDIA AND PYLORUS: GAIN OF 35 POUNDS IN WEIGHT WITHIN THREE MONTHS OF DEATH.[1]

BY G. W. M'CASKEY, A.M., M.D.,

OF FORT WAYNE, IND.

The following case presents features which appear to render it worthy of a separate record as it has a bearing on some interesting questions relative to diagnosis. The case is included in another paper reporting six cases of cardio-esophageal cancer.

The patient, Mr. G., aged forty years, was referred by Dr. James Wilson, of Wabash, Ind., February 7, 1902. He gave a history of "stomach trouble" of about one year's duration. The first symptom was pain after eating in the region of the stomach, also in the back between the shoulders especially in the right side. A few weeks later he began to have excessive gas formation in the stomach, both this and the pain being most aggravated almost immediately after eating. This second symptom had been persistent but rather worse for the six weeks preceding my examination. He had vomited only a few times, and this had never been in close relation to meals.

Five months after the beginning of the symptoms, he had a severe attack of "gastralgia" following dietetic indiscretion, and from that time on the pain was more troublesome. It was also more severe when the patient was on his feet, especially if exercising much, and lying down at night would give relief. There was a tendency to constipation but never any sign of melena; he was greatly troubled by intestinal gas. His normal weight was 220 pounds, but he had lost about 45 pounds.

Upon physical examination the liver was found to be slightly enlarged, rather firm on pressure, but not tender and quite irregular on the margin. The stomach was not enlarged. Examination otherwise negative. Test-meal revealed the absence of free hydrochloric acid but strong biuret reaction; lactic acid was present, but no Oppler-Boas bacillus. Uranalysis gave no important indications except in the presence of the ethereal compounds of skatol and indol. Later in the case, in June, before my last examination, there appeared a little albumin and bile acids.

The blood examination showed 15,000 leucocytes at the first examination, and 10,000 a week later. The blood was concentrated containing 6,000,000 red cells upon first examination and 5,500,000 on the second with about 110 per cent. of the normal amount of hemoglobin. There was a slight mucous colitis.

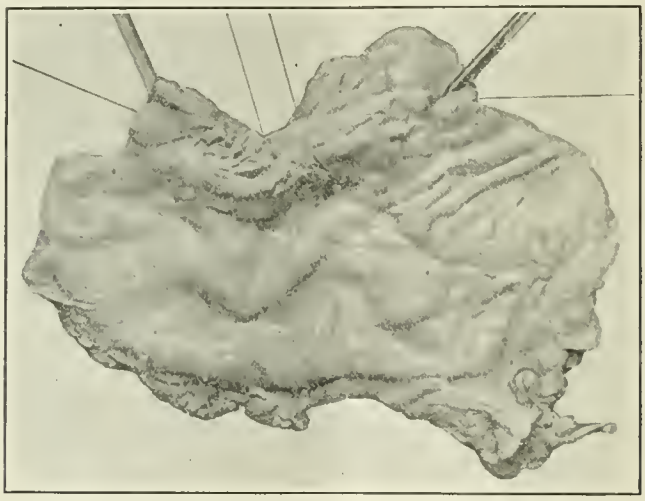
It is perhaps worth noting that the patient had grip three years previous, and "walking typhoid" two years prior to examination, and had not been perfectly well since the last mentioned illness.

[1] Read before the Allen County (Ind.) Medical Society.

The patient was under my personal observation and treatment for a few weeks, and the stomach conditions improved somewhat, a little free hydrochloric acid appearing once or twice. A few weeks later the stomach symptoms suddenly left him, his appetite became morbidly voracious, and he ate with impunity enormous quantities of meat, bread, potatoes and other solid food, and in three weeks his weight increased thirty-five pounds. There was no dropsy at that time and the phenomenal increase of weight was clearly due to tissue building of one sort or another. The gain did not last, however, the stomach symptoms recurring in three or four weeks; a little later marked jaundice supervened: still later, about four weeks before death, which occurred in November, five months after my last examination, general dropsy developed.

The disappearance of stomach disturbance, the voracious appetite and the rapid increase of weight are certainly remarkable phenomena in the case of a patient who died of cancer some three months later, as the autopsy showed that there must have been considerable involvement at that time of both the stomach and liver. It would constitute a disturbing factor in the diagnosis if such a case would present itself during the progress of such phenomena. While I did not see the patient during or after this occurrence, I inquired closely concerning the patient's appearance, and I am informed by his attending physician that along with the increase of weight, rotundity of form, etc., there was not a corresponding approach toward appearance of health. This, from a diagnostic point of view, is a saving clause.

Fig. 1.



1. Pylorus; 2 and 3. The space between these lines was not indurated, and was apparently free from involvement, although the shading in cut tends to give a different impression; 4. Cardiac orifice.

At the time the patient left me, I had expressed to Dr. Wilson a strong suspicion of cancer and was considering the advisability of recommending an exploratory procedure.

At the autopsy, which was made by Dr. Wilson, the liver was found to be markedly enlarged with a diffuse carcinomatous process, while the stomach was apparently normal, excepting in the pyloric and cardiac regions where it was much thickened by neoplastic formation. The middle part of the lesser curvature was almost, if not entirely free from the morbid process for perhaps an inch or thereabouts, the pyloric and cardiac neoplasms gradually shading off in thickness toward this point. Sections of the neoplasms showed typical adenocarcinoma. The stomach, which was removed entire and sent to me by Dr. Wilson, was apparently normal in every other respect, and was not greatly enlarged, its capacity being 1,200 c.c.

In reviewing the case in the light of the autopsy, it would appear probable that the cancer of the liver was the primary process, the preponderance and priority of pain in the hepatic region, while not very marked tends to support this view of the case. On the other hand, it is quite possible that the gastric cancer was primary though very slow in its evolution and that the liver was the last organ implicated. Anatomical and physiological considerations tend to support this view, as the movement of fluids by which metastatic processes occur does not take place from the liver to the stomach, but from the stomach to the liver. The accompanying cut indicates the area of carcinomatous invasion, and so far as I know such a distribution is rare.

Hahnemann Medical College.—The fifty-sixth annual commencement was held May 21, a class of 66 being graduated.

POSTPARTUM TUBO-OVARIAN ABSCESS CAUSING HYDRONEPHROSIS.[1]

BY A. ERNEST GALLANT, M.D.,

OF NEW YORK.

The case from which the specimen herewith presented was removed, afforded several points of unusual interest, not only from a diagnostic standpoint, but also in relation to its mode of development, the plan adopted for its removal, the after-care and rapid convalescence.

1. The advent of labor was announced by rupture of the membranes, inefficient pains; manual dilatation of the cervix, and final delivery by high forceps; child strong and healthy.

2. Rising temperature on fourth day, with no vaginal evidence of infection.

3. A rapidly forming tumor developed on right side during seventh and eighth days, pressing on ureter, causing hydronephrosis with marked diminution of urine, and thought to be due to a prolapsed kidney.

4. No relief by posture. Aspiration at first of clear urine, followed by pus, tumor diminished in size to one-half, and passage of 64 ounces of urine during next twenty-four hours.

5. Cystoscopy showed bladder somewhat inflamed, clear urine from both ureters.

6. Tumor refilling; increasing pulse and respiration deemed good reason for operation. Through lumbar incision, splitting the muscles, a flattened kidney was made out, and an intraperitoneal tumor dissected from the undersurface of the liver and diaphragm; attached below by a broad pedicle to the pelvic brim. Not wishing to elongate the lumbar incision, the tumor was emptied through a two-inch median incision, and proved to be a tubo-ovarian abscess.

7. Massage begun the day after operation, and continued daily; pulse, temperature and respiration fell during anesthesia and never rose above 99.5° F. afterward. Primary union throughout. The patient was out of bed on the fifteenth day, and rapidly regained her former strength.

8. The application of a specially designed corset, for the prevention of hernia and visceral prolapse. Also gauze vaginal tamponade of the vagina after the uterus had entered the pelvis, to assist that organ in resuming its proper relation to the bladder and the prevention of uterine displacement.

Mrs. E. M., *September* 13, 1903. Premature rupture of membranes, manual dilatation of cervix; high forceps; living child.

September 17, fourth day, post partum, Dr. Moss reports temperature 102° F., lochia normal, uterus contracted, not tender. Cannot account for fever.

September 21, eighth day, Dr. Moss reports that during past two days a tumor has been rapidly forming on the right side, bulging the anterior wall forward. Temperature 102° F., pulse 128. Examination shows a moderately tense, fluctuating tumor, extending from under the ribs, to the pelvic brim of the right side, also causing bulging in the right loin. Cannot be felt through vagina. Lochia stopped; no discharge, no odor; uterus on level with brim, moderately firm, os externum gapes, lacerated into right fornix; left fornix soft and pliable. Urine markedly diminished, 19 to 20 ounces during past twenty-four hours. Diagnosis: Hydronephrosis, probably due to prolapsed kidney. Foot of the bed elevated, in hope of relieving retention. Bladder irritable.

September 22, ninth day, post partum, trocar introduced just below twelfth rib in anterior axillary line, and clear urine dribbled away; trocar reintroduced a little lower and posterior, half its length, and about 24 ounces of clear urine of a very dark, smoky color came away; trocar pushed in full length, with pressure, was followed by five to six ounces of pus, and reduced the tumor to one-half its former size. During the following twenty-four hours, 64 ounces of urine were passed, sp. gr. 1.012, normal color.

September 23, tenth day, post partum, cystoscopy: Bladder interior somewhat congested. Several small congested areas on lower and posterior surface, attributed to the catheter, which had been used during the preceding week; clear urine from both ureters; right ureteral opening edematous. 1 P.M., 26-90-98.4; 9 P.M., 24-94-99.

September 24, 8 A.M., 26-94-99; 8.30 P.M., 30-108-99.

September 25, twelfth day, post partum, 6 A.M., 30-110-98.2; 12 N., 30-120-99.2.

Dr. Moss reports tumor refilling, and on account of increasing pulse rate and rapid breathing it was decided to operate for the removal of probable pyonephrosis, with kinking of the ureter.

Operation began at 3 P.M., Dr. E. W. Peet assisting; Dr. Plympton administering ether. Patient on kidney bag; an oblique incision was made from the edge of the twelfth rib to the anterior superior spine; the muscles split layer by layer; the twelfth nerve pushed aside, and after tearing through the fatty capsule the kidney was found well up above the twelfth rib, firmly fixed in its normal position, moderately enlarged, and *flattened*, being only about half as thick as normal. Further examination showed the tumor to be wholly intraperitoneal; the peritoneum was opened, the tumor, by blunt dissection, separated from its attachment to the under surface of the liver and diaphragm posteriorly; and when free settled downward and inward in the abdominal cavity. On following it down it was found attached to the pelvic brim by a broad pedicle which could not be reached through the posterior incision without extending it through muscles. I preferred to close the lumbar wound, and then made a two-inch median incision just above the pubis; drew the tumor to this opening and drained off more than two pints of pus; delivered the sac, which was then recognized as attached to the right broad ligament,

[1] Presented to the American Urological Association.

and involved the tube and ovary of that side. The stump was sutured; dropped back, and the median wound closed. Ether 1 hour 40 minutes, operation 1 hour 29 minutes. Highest pulse 140, at close of operation 112. 8 P.M., 30-108-99.

September 29, fourth day, sutures removed; primary union throughout.

October 10, fifteenth day, out of bed one hour.

October 21, nurse discharged. *October* 28, corset put on.

Note.—April 21, 1904. Dr. Moss reports that the patient's health has been excellent; and, excepting some irregularity of menstruation and a sense of stiffness and soreness in the lumbar region on lifting, is as well as can be. Advised to resume calisthenics daily.

60 West Fifty-sixth Street.

ETHYL CHLORIDE AS A GENERAL ANESTHETIC.[1]

BY A. F. ERDMANN, A.B., M.D.,
OF BROOKLYN, N. Y.

Probably most American anesthetists and surgeons share the experience and opinion of the writer of a paper on surgical anesthesia (*Journal American Medical Association,* Dec. 5. 1903, p. 1400) who says, "My experience with ethyl chloride as a general anesthetic is *nil,* but from the data at hand I am inclined to class it with the more dangerous anesthetics, and would expect it to be especially dangerous in cardiac and respiratory troubles." It is certainly true that an astonishingly small proportion of such practitioners are at all familiar with this most valuable anesthetic agent. The writer, after diligent inquiry, has been able to find only one surgeon in Brooklyn who is really using it. In Manhattan there are only a few more. In Philadelphia it is used at the University Hospital. Cumston in Boston has now made use of it in 350 cases. Allen at the Massachusetts General Hospital has employed it in about 60 cases. There is a report of its use in the Medical Association, Chicago, 1900, xxxii, p. 710. Nor as yet have the English surgeons generally taken kindly to ethyl chloride. But on the continent, in France especially, many are turning from both nitrous oxide and bromide of ethyl to this recently anew exploited systemic anesthetic agent.

This anomaly appears still more strange when one considers what claims are made for ethyl chloride, and upon what facts the French, Swiss and Germans base their good opinions. In a word, it is maintained that ethyl chloride is a relatively safe general anesthetic, exceedingly simple in its use, particularly pleasant to inhale, surprisingly rapid in both its action upon the body and its escape from it, and happily much less liable to those unpleasant sequelæ, both serious and simple, which so often follow other anesthetics. The fact that some 30,000—estimated—anesthesias have already been given should be enough to ensure it a favorable attention, and when one considers in addition all the operations for which it has been successfully used he is less surprised that some anesthetists do, and more surprised that some do not make use of ethyl chloride. Ware,[1] of New York, for instance, has employed it 2,000 times, chiefly in minor surgery on women and children. Mazzoni[2] (Rome) has done laparotomies and a vaginal hysterectomy. Malherbe[3] (Paris) tells of a mammectomy and a herniotomy where ethyl chloride was used. In Birmingham[4] they do operations for strabismus under its influence. At Guy's Hospital[5] iridectomies are not uncommon. *La Presse Médicale* June 29, 1901, reports enucleations and operations for muscular advancement where it was used. At Innsbruck[6] they had no bad results in employing it with patients having heart lesions and respiratory affections. The pulse remained normal in a case of marked mitral obstruction reported by Nové-Josserand.[7] This same surgeon operated in the presence of advanced phthisis. The Swiss surgeon, Bossart,[8] reports similar cases. Patients have been cyanotic and dyspneic, requiring tracheotomy. Reboul[9] tells of a child four and a half years of age, extremely feeble after a prolonged typhoid fever, in whom some abscesses were opened. A number of patients had a temperature of over 39.5° C. and some were suffering from emphysema and arteriosclerosis. An operation was done during the seventh month of pregnancy. A number of interesting experiences in midwifery are described by Lepage and Lorier,[10] and by Burnet (*The Medical Press, December* 10, 1902). I have myself had excellent results in forceps cases.

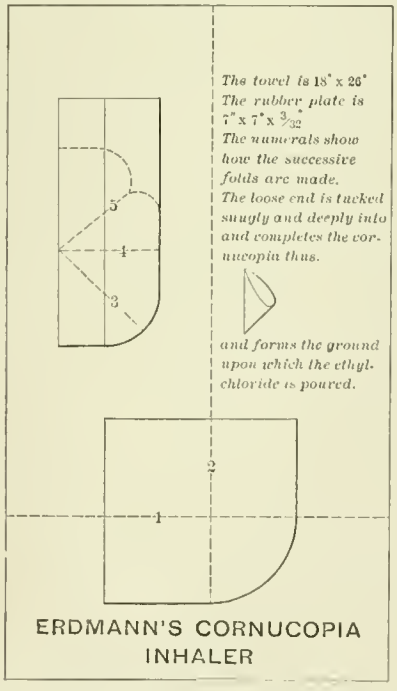
A lad, ten years of age, took it in all 33 times; another boy, twelve years of age, 12 times, and a woman of fifty-six years took it ten times.[8] In neither an infant of three months nor a patient of seventy-nine was there any untoward symptom. A child[2] three years of age was given 120 c.c. during an operation for an impacted urethral calculus which lasted over an hour. What a list! Again and again the reporters say that there was no alarming symptom or that there was not the least cause for alarm. In *Guy's Hospital Gazette,* April 11, 1903 one reads, "In the presence of grave hemorrhage the ideal anesthetic is A. C. E., or Kelene followed by A. C. E."

Perhaps one of you will now be willing to let me use ethyl chloride for one of your cases. Maybe it is an office case: an abscess is to be opened, or a vaginal examination is to be made under anesthesia. Of course it is best that the patient has not eaten just previously; yet if she has and vomiting does occur it will probably be only slight and transient. Clarke (Brooklyn) says his patients have never vomited. Ware's hour at the Good Samaritan Dispensary (New York) is in the early afternoon and he anesthetizes his patients as they come, even just from dinner. Perhaps the patient objects to lying down, or may be the operation is to be a tonsil-

[1] Read before the Associated Physicians of Long Island, January 23, 1904.

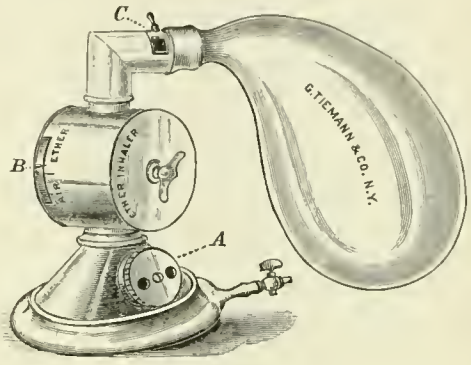
otomy or other throat operation and the Rose position is not desired; you may have him anesthetized sitting in a chair, if you wish that position, and know that this is a common practice. But it will be prudent to have him on his back. A syncope is reported from Wolverhampton when the patient sat up during an operation. McCardie[4] (Birmingham) and a French dentist had similar mishaps. It will be wisest to observe the ordinary precautions which are taken in any anesthesia.

One is now ready to choose an inhaler. But this is not such a simple matter, for there are many of them. It may be a plain gauze compress, costing next to nothing, or an elaborate so-called "Minimum," which is sold for 120 M. It may be comparatively open, as Ware's model, or tightly closed, as the "cornet" used by Fromaget[12] or the cornucopia described by the author in his paper, *The actual Schleich narcosis* (*Brooklyn Medical Journal,* June, 1899). Or it may be one less closed, as some form of the Clover[13] or Ormsby bag apparatus, or less open as the Breuersche Korb,[11] after whose design Kny-Scherer are making an American model. Between these extremes there are many others. The Schönemann as well as the Seitz, universal mask; Brodtbeck's celluloid mask with an iris diaphragm. Juilliard's large ether mask has been used. For mixed anesthesias a serviceable form is this simple modification along well-known


The towel is 18" x 26"
The rubber plate is 7" x 7" x 3/32
The numerals show how the successive folds are made.
The loose end is tucked snugly and deeply into and completes the cornucopia thus.
and forms the ground upon which the ethyl-chloride is poured.
5
4
3
2
1
ERDMANN'S CORNUCOPIA INHALER

lines of the Allis inhaler (*Medical Record,* Jan. 23, 1904). Since this paper was written I have seen Goldan's (N. Y.) apparatus. The ethyl chloride is confined on gauze in a tube between valves so that there is at once an "open" method of administration and an absolute prevention of waste.

The gauze compress and the towel cornucopia are simple and clean, and save the ethyl chloride; but they, as well as the English bag apparatus—with these would have to be included the several American models which are just as good—necessitate an essentially close method. The Breuer form is a good one, but the construction of the



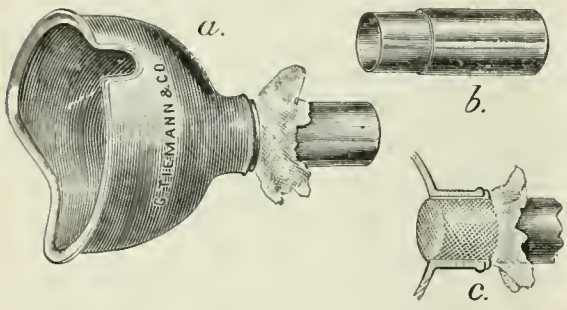
valves forbids cleansing and, besides, it is as yet a very expensive apparatus. The author prefers Ware's[14] mask, because it is simple and inexpensive, gives plenty of air and can be readily cleaned. However, when the patient can bear a more concentrated vapor, the most brilliant results are obtained with a "close" mask. This is especially true in obstetrical work when the patient must be eased quickly yet transiently. I have had great satisfaction on several occasions in noticing how promptly the pains were relieved and how very wide awake the patients were during the intervals.

Of the half dozen preparations of the ethyl chloride which can be purchased only two are as yet generally used. Probably unless the author specifies, that form known as Kelene is always meant. Kelene is the trade name for the product of the Société Chimique des Usines du Rhône, The Monnet tube in which it is put up is convenient and enables the anesthetics to follow easily Ware's direction to "spray intermittently." Dr. Henning, in Berlin, manufactures a most excellent product which is known as "aetherchloratus narkosi," or simply as Henning's ethyl chloride. This can be obtained as yet only in a container which cannot well be inverted. The small tubes which Henning makes containing only 3 to 5 c.c., ought to be very handy for one who prefers the close method and mass doses. These others, Antidolorin and Anodynone, have been used so far as I can learn only by Cumston, who reports favorably upon them in an excellent article in the *Boston Medical and Surgical Journal,* January, 1903. Clarke (Brooklyn) uses the Bengué product. Any pure ethyl chloride can be used. The author does not mean to say that only the two prominently mentioned are pure forms, but merely reports what he has noticed in his investigation, that they with the Bengué product are considered to be the best.

Ethyl chloride is decidedly pleasant; it is

neither cold nor pungent, does not cause any choking or coughing and only in a very large dose might it cause one to hold the breath. Sometimes if the gauze in the Ware mask is not thick enough some of the spray will fall upon the face and cause the patient to shrink. But this is only a momentary unpleasantness and can be entirely avoided by care in preparing the mask. On the other hand, if the gauze is too thick and the capillary opening in the tube large then a hoar frost readily forms on the gauze and occludes the opening. In both such instances one must know how to adapt the spray to the thickness of the gauze diaphragm. If the gauze compress or the cornucopia is used care must be exercised not to allow the fluid to touch the face. That it is comparatively harmless, however, the author knows, for he once sprayed a drop into his own eye without any injury resulting.

There are really only two methods of exhibiting ethyl chloride and these differ only in this, that whereas Ware's apparatus allows the anesthetist to give it drop by drop, as it were, and thus suit the amount to the patient—to individualize the patient—all other forms are meant to re-



ceive a mass dose, on the assumption that 2½ c.c. is the smallest amount which will narcotize any one. Some operators give 5 c.c. or even up to 15 and 20 c.c. at once.[25] I cannot feel that this is a wise procedure. If one follows Ware's method he will probably find, unless he is unusually proficient, that he will take a longer time and use more of the anesthetic than when a close method is followed. But he may feel that he is working along more rational lines and because he is better able to treat a patient's possibly greater susceptibility, he can give more accurate doses and will feel safer. After a few inspirations the pulse rate may become somewhat heightened. Usually a rapid pulse continues such; a slow one may be accelerated. Many times there is no change whatever. It is thought by some that the acceleration is due to a too highly diluted vapor, and that the patient becomes nervous because he does not go under fast enough. The tinnitus aurium and sounds of whistling and hammering which may be present at this early stage might easily excite persons already apprehensive of danger. Or, again, a dose relatively too large may send the pulse up. Dumont in particular, calls attention to this. All observers agree with McCardie[4] that the pulse may be disregarded so long as the respirations remain full and strong.

Is there any arterial hypotension? H. C. Wood (University of Pennsylvania) in the 1892 *Dental Cosmos,* basing his opinion solely upon some animal experiments, said there is always a fall of the blood pressure due to a direct depression of the heart. But he used an admittedly concentrated and suffocating dose, and induced some of the anesthesias even by injecting the ethyl chloride directly into the jugular vein. König[15] records the same effect but does not consider it to be so marked and ascribes it especially to a concentrated vapor: and even then he found it less true of the monkey than in dogs. Malherbe and Rubinovitch[16] using the Potain sphygmomanometer on 24 human subjects also sustain these findings: in 22 instances there was arterial depression and the number of the heart beats increased apace with the lowered tension. Ruegg[17] of Basle maintains that a dilute vapor dilates the blood-vessels while a concentrated vapor contracts them and increases the heart's action. The weight of clinical observation is against these deductions from animal experiments. The heart is not usually affected; if it is, the temporary change may be ascribed to the causes already mentioned and quickly ceases when the anesthetic is stopped. Rose[18] (Bristol) did not find any variation worth recording in the four anesthesias to which a woman submitted whose heart sounds were observed by a loud double mitral murmur. Bossart[8] (Aaran) reports three cases of compensated heart lesion all acting favorably. Hacker (Innsbruck) says he had no bad results in a case of fatty degeneration. It is a common experience to begin with a pulse at 120—I had one at 132—and find no change during a short operation.

But the effect upon the respiration is more marked even from the beginning. There is no irregularity, but a deepening of the thoracic excursion, an augmentation of the force and usually some increase, a regular increase in the rapidity. But it does not become shallow or slow. Sometimes a soft snoring is observed. Several cases are reported of a temporary inhibition of the breathing. These may have been true apneic pauses, or have been due to atonic spasm of the chest muscles or of the diaphragm. They quickly passed away when the mask was removed. In the main Nové-Josserand's[7] observation will hold true, that the respiration remains calm, regular, deep, sometimes a little stertorous, but is usually not greatly modified.

Especial attention must be directed to a frequently observed phenomenon. If the patient begins to snore he is ready. This effect is so commonly produced that McCardie counts it as one of the cardinal signs of a fully established anesthesia. If in addition to this the muscles are relaxed and the conjunctival reflex is lost, while the pupil is moderately dilated and the eyeball is turned to one side, then it is only time lost to delay any longer.

Yet it is not necessary to wait for all of these

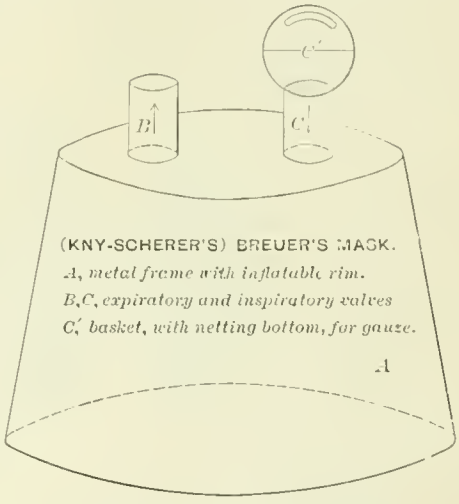
signs. Sometimes there is not complete muscular relaxation, nor are the conjunctivæ always insensible. There may even be contracture of the muscles somewhat as in the cataleptic state. When this occurs Seitz[19] (Constance) says it is a true second stage and corresponds to that brief moment in an ether anesthesia which is called the *aetherrausch,* and like that can be utilized for a short operation. The patient is not really anesthetized as we use the term, but he has been *analgesized,* if I may coin a word, he does not feel the pain although he may resist the attempt to operate. I have had several cases which illustrate this. One was a simple perineorrhaphy. The patient consumed more Kelene than I had expected, so that just as she was ready—cataleptic—the anesthetic tube was emptied unfortunately. I thought that the stitch could be taken anyway, but as she squirmed some when the needle touched her, it was thought best under the circumstances not to persist. I was greatly chagrined when she said a minute later that she had not felt any pain whatever. The other case was even more pronounced. Suffice it to say that an infected finger was opened while the man was struggling. When he regained consciousness he had no recollection of any pain. He said he felt that something was being done to his finger but he did not know what.

It is a common practice to exhibit the ordinary dose (2½ to 5 c.c.) after a "close" method and to operate after a few minutes even if the patient seems to feel. If once the breathing has become rapid, especially if snoring in character, the pupil moderately dilated, and the patient has made purposeless movements or has stiffened the whole or a part of his body, he is insensible to pain and the short operations may be done in good conscience. One will find that in a complete anesthesia the muscles do relax sufficiently to permit operations in which this condition is required. A study of the operations already reported, laparotomies, amputations, the reductions of old dislocations and others shows that such must be the case.

Yet sometimes the muscles will not relax sufficiently, or there is too pronounced a stage of excitement. Ware (New York) reports 5 per cent., Girard[20] (Toulon) 6 per cent. of failures. Reboul had to change the anesthesia in five instances. McCardie records some failures with the Breuer mask, but says that he is able to anesthetize any one, even an alcoholic, with the Ormsby inhaler.

Nervous patients usually make some erratic motions or cry out incoherently. Alcoholics are notoriously bad subjects for any anesthetic, and ethyl chloride is no exception. Yet it does seem that they struggle least when that is used or even not at all, and they can be quieted absolutely if a preliminary hypodermic injection of morphine is given. Even if there has been excitement and struggling they seldom are aware of it afterward as being caused by the anesthetic. They remember it as from a dream. Sometimes the dreams are very real. A patient of the author laughingly said he had imagined he was being assaulted by two robbers and that his struggles were to free himself. This was a near approach to the nightmare of which some occasionally speak.

Much more usual is the experience of passing through pleasant scenes and enjoyable occasions. Girard[20] tells of a young woman who both asked and answered questions during the course of the operation. Strangely, upon awakening, she recalled only a vivid dream of having been transported far away into and through deep woods and flower gardens. He also interestingly narrates his own experience. He dreamed that he was visiting again some Alpine mountains and beheld a marvelously beautiful sky and sun. When he awoke after the short operation he sat up on the table rubbing his hands, surprised at his position and disbelieving that the operation had been done. He was able to get down without any assistance; had no unpleasant feelings except a pasty taste and was able to direct a scheduled operation.



(KNY-SCHERER'S) BREUER'S MASK.
A, metal frame with inflatable rim.
B,C, expiratory and inspiratory valves
C' basket, with netting bottom, for gauze.

There would seem to be some reason for taking the precaution of having a third party present when anesthetizing women, for two anesthetists have already been accused of having made criminal assaults. It is not indeed very unusual, when the operation is upon or about the genitals, to notice that the dreams seem to be of an erotic nature. In a recent case the author observed an annoying priapism. A report is made of another such instance in which even the orgasm took place. These are comparatively rare observations, to be sure, and are mentioned only that they may be expected.

Whatever the character of the unconscious or subconscious state, or however much the patients speak or move one does not have to fear the rebuke not infrequently heard after a gas anesthesia, that the pain was all felt but the power to manifest it was absent. Once under the anesthetic the sense of pain has disappeared, though the tactile sense may remain. A curious fact is that this analgesia continues for some time after consciousness has returned; it may be even for ten and twenty minutes.[26]

The awakening is rapid, sometimes within a few seconds after the mask is removed, and generally, according to the quantity of the anesthetic inhaled. It is a return to full consciousness. The eye is wide open, the senses are active, there is neither dulness of hearing nor a dimmed vision, the aspect of the face does not indicate the presence of an anesthetic; there is no odor on the breath, perhaps a pasty taste which a swallow or gargle of water quickly removes, rarely a headache and vomiting is less frequent than after either chloroform or ether. In dispensary practice the child begins to cry after a few breaths, a slight shake rouses it completely, the mother picks it up and by the time it is dressed the mother can take it home.

An interesting and typical case which I saw at the Good Samaritan Dispensary, New York, a few days ago was that of a middle-aged woman who had been anesthetized for about five minutes while an ugly mammary abscess was opened, cleaned and packed. She lay still for about a minute after the mask was removed, and then taking several long breaths opened her eyes and was helped to sit up on the table. She looked about her in a puzzled sort of a way, then slid down from the table without any assistance, arranged her clothing and after a few minutes walked around to the surgeon showing and asking relief for the eroded nipple of the other breast. A similar course marked the completion of a minor operation at the Norwegian Hospital (Brooklyn) a short time ago. A few moments after the operation the patient was out in the corridor drinking a glass of water.

This freedom from annoying after-effects is seen in most cases, but there are some patients who vomit. This seems to be a misadventure from which no anesthetic is entirely free. However, the vomiting is neither severe nor of long duration. Some observers have never seen it. In a personal communication from the Massachusetts General Hospital, Allen says he sees nausea and vomiting in many cases: Rose (Bristol) says in two per cent., Bossart (Aaran) twelve per cent, Cumston[21] (Boston) twenty per cent., Girard (Toulon) thirty-nine per cent. McCardie says it occurs more often with ethyl chloride than after nitrous oxide, less frequently than after the so-called "heavy" anesthetic agents. The amount of the anesthetic used is doubtless a determining factor.

This is also true of any effect upon the liver and kidneys. Gaudiani[2] found albumin after a long operation; Nouvé-Josserand[7] only when much ethyl chloride had been used. Reboul[9] did not find any albumin at all. Dumont[11] says König did not find any. Girard[20] and Malherbe found both albumin and bile pigment. Seitz did not observe any adverse changes even in a patient with an amyloid kidney. Another author makes the sweeping assertion that neither dyspeptics, nor hepatitics, nor nephritics, are in any way injured by ethyl chloride.

The skin does not give many signs. Cyanosis is exceedingly rare, even with a "close" method, and depends entirely upon mechanical causes. There is no pallor; on the contrary the tendency is to a dilation of the superficial capillaries of the face and the upper trunk so that a slight erythema is sometimes noticed or even a pronounced rash. A warm moisture is frequently observed both during and after the anesthesia. This external vascular movement has led Girard[20] to assume a similar determination of the blood to the brain and medulla. If this assumption can be established it will give rise to a comforting optimism that the vital centers are in no danger from anemia.

But the effect of ethyl chloride upon the vital centers and brain is not yet unequivocally determined. However, a particular observation which is especially emphasized, is its evident and pronouncedly selective action upon the dissociating brain neuroglia—hence the early incoordination of both movement and perception. If now, according to Schleich's theory[22] of the varying degrees of resistance to any anesthetic of the several cortical layers, in accordance with which it is supposed that the nerve cells are least affected in the lower cerebral planes, and that the purely vegetative or automatic functions are governed by the lowest strata of the brain substance, then one would feel like believing that because ethyl chloride acts so rapidly upon the upper portions it does not need to be pushed so far as to deeply affect the older and more resistant areas of the purely organic functions of the brain. Besides this, the motor ganglia of the cord seem to be peculiarly resistant or may be even stimulated so that a more or less continued tonic spasm of the voluntary muscles is present to some degree all through the course of an operation.

In noting his observations of the effect of ethyl chloride upon the heart Nové-Josserand is inclined to believe that some heart depression which was manifested was due to vagal stimulation, for this, he says, ceased upon section of the vagus. Girard, on the other hand, after numerous experiments, is very emphatic in his opinion that the "moderator center is really inhibited" as it were, and adds: "We insist upon this important fact—a fact the value of which experience has proven—that a secondary cardiac syncope ought not to be feared in the course of an established anesthesia." Since Girard also denies any irritation of the trigeminus, it will be seen that he also does not fear any reflex heart failure in the beginning of the anesthesia. Seitz, however, having seen some unpleasant interferences with the respiratory rhythm is afraid that the sensory fibers of the trigeminus might be irritated enough to cause a glottic spasm, and that if there were any impairment of the coronary arteries, the resulting increase of the intrathoracic pressure might close them and cause death. He is the only one, by the way, who expresses this fear, and even then he limits his objections to the use of Kelene. Henning's preparation he finds to be much less pungent and irritating. I must say that I cannot

smell any difference; to me neither is in the least degree unpleasant.

So ethyl chloride may be dangerous. To be sure, it is only relatively safe. And yet, according to present statistics it is the least dangerous of all anesthetics, excepting only nitrous oxide. Most of the half dozen deaths which are reported have been unjustly charged against it. Lotheissen[23] (Innsbruck) has looked into all the records and has this to say: "The anesthetic in Soulier's case was not ethyl chloride (C_2H_5Cl) at all, but ethyliden chloride ($C_2H_4Cl_2$). Zeitz' (Zürich) death occurred sixteen hours after local use. In another instance ether for forty-nine minutes followed a one minute exhibition of ethyl chloride. McCardie's (Birmingham) case was that of a very debilitated patient who died an hour and a quarter after regaining consciousness. The autopsy showed nephritis, chronic adhesive peritonitis, pleuritis, and a fatty liver. Surely a bad case for any anesthetic. Bossart's case also was contraindicated for general anesthesia. A tracheotomy was to be done upon a cyanosed child to relieve the dyspnea caused by laryngeal diphtheria. Lotheissen's own case in 1901 was an alcoholic, forty-one years of age, who died within three minutes after the anesthetic was begun and after only about 5 c.c. had been sprayed into the Brewer mask. The case has been widely discussed. The necropsy revealed fatty degeneration of the heart and marked coronal sclerosis.

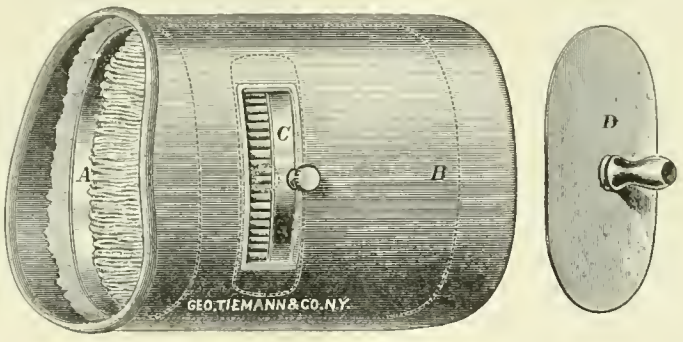
The December, 1903, *American Journal of the Medical Sciences* reports a death at the University of Pennsylvania Hospital. The man did not die from the effect of the anesthetic. He vomited an enormous quantity of an almost clear watery liquid for about three minutes without any retching or inspiratory effort. When vomiting finally stopped he was dead. Lotheissen's death was probably due to an initial irritation of the trigeminal fibers, and in McCardie's case the anesthetic, if not the sole cause, was yet a factor. Since at least 25,000 anesthesias have been given—30,000 is more likely—this surely is not a disquieting statistic. Some dangerous minor symptoms have been reported. But these were clearly due to an accidental overdose (Bossart's case) or "the outcome of neglected attention to a retroplaced tongue, or a disregard of sufficient admixture of air" (Ware's[24] cases).

And now, in closing, a few cautions, a consideration of suggested contraindications and a recapitulation of the course of the narcosis.

The ethyl chloride must be chemically pure. The mask must fit the face snugly. As little as possible should be given—a half a dram is a good initial mass dose. Mauretta[25] gave up to three and four drams without ill effect, but the general opinion is against such practice. A graduated container must be employed, else the dosage is uncertain. Other rules every anesthetist knows: to watch the eyes, respiration and pulse; to insist upon quiet in and about the anesthetizing room, and to avoid an open flame.[21]

Only two contraindications have been suggested. If the laryngeal aperture is abnormally small, lest it be aggravated to a stenosis by an irritating vapor. If any kidney disease is present. But Girard alone suggests this danger. It is not commonly held that the kidney suffers any harm.

Ethyl chloride is a safe, pleasant, rapid systemic anesthetic agent. The preanesthetic or short analgesic stage continues for only a fraction of a minute, and is followed by a condition



characterized by some tonic contractures, accelerated respiration and usually a moderate degree of mydriasis; this is called the catalyptic stage by some, the stage of contracture, or the stage of analgesia by others, and is suitable for short operations. After two to five c.c. have been inhaled, or more, in the case of large adults, usually after fifteen to sixty seconds, or sooner in children, the third stage that of profound anesthesia supervenes. The muscles are now relaxed, the breathing is deep and rhythmical, perhaps snoring, usually the pupil continues to be somewhat dilated, and the conjunctival reflex is abolished. In some instances the patient passes at once into the third stage, sometimes it takes five minutes, once in a while the third stage is not reached at all. If the ethyl chloride is to be continued small doses, say one c.c., are given about every minute; or if a mixed anesthesia is to be used the change can readily be made if the modified Allis inhaler is employed. The patient is awake within a few minutes after the mask is removed. After a short anesthesia he is seldom nauseated and rarely complains of a headache. He may be a trifle upset by his strange position and surroundings, but he will quickly recover himself. If it

was a long operation and he is taken to the ward he soon will be as natural as the other patients. If it was a short operation, say in the office, he will not be delayed long from going about his business.

To one desirous of considering this subject in greater detail, the author commends Ware's several papers, McCardie's excellent article, Cunniston's comprehensive essay, Girard's detailed description, and the chapters on ethyl chloride in both Dumont's and Zeitz's excellent books on anesthesia.

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MEDICAL PROGRESS.

SURGERY.

Traumatic Asphyxia.—The number of these cases which have been studied in life is very small, six cases in all having been reported. H. H. A. BEACH and FARRAR COBB (Ann. of Surg., April, 1904) report a case which is of particular interest because it is accompanied by a close description of the pathology of the skin which clears up all doubt as to the nature of the lesion and cause of the discoloration. The patient was a robust German, thirty years of age, who had been caught an hour before entrance to the Massachusetts General Hospital in a moving freight elevator. He was held from three to five minutes. While being released, his face became black, blood poured from his nose and mouth and his eyes protruded. He became unconscious. Physical examination showed that he had been severely injured from the buttocks to the midthoracic region. In the left loin was a large fluctuating hematoma, the eighth and ninth ribs on the left side were broken. Heart and lungs were negative. The face was of a purplish hue, this color extending from forehead to just above the clavicle. Pressure on this black skin did not cause it to pale. What is characteristic of all cases was noted here, viz., at the back of the neck there was none of the discoloration except within the confines of the trapezius. There were no retinal hemorrhages. The subconjunctival hemorrhages were so excessive as to cause that membrane to bulge. The pupils and urine were normal. Patient recovered without complication save for an acute involvement of his lungs lasting over twenty-four hours. Forty-eight hours after the injury bits of skin were removed from the neck and subjected to microscopical examination. Seventy-two hours after the injury the discoloration disappeared very rapidly by simply fading out. The discoloration did not undergo the usual chemotactic changes seen in the absorption of a blood clot. The cause of this unusual condition is generally admitted to be forcible compression of the chest lasting over several minutes and accompanied by cessation of respiration. Death of individuals in struggling crowds and mobs has often been accompanied by this symptom. There are no gross post-mortem findings in these cases other than those usually characteristic of cases of suffocation. Wright, pathologist of the hospital, reported that every section studied showed normal skin, nowhere were evidences of blood in the tissues outside of the blood vessels. This, combined with the absence of chronic change, appears to the authors to show that conclusions to the effect that hemorrhages are the cause of the discoloration are erroneous. As to the cause of the sharp limitations of the color to the head and neck, the writers make no suggestions, but are inclined to consider favorably the theory of Perthes which ascribes it to the lack of valves in the jugular and facial veins. The conclusions are that the immediate use of artificial respiration in these cases is the only therapy indicated. The development of what has been called contusion pneumonia is very common and yet it should be remembered that so far as the literature goes, this may be depended upon to clear away without serious trouble.

Appendicitis in Children.—The diagnosis of appendicitis in children is usually more difficult than in adults from the fact that one must rely largely upon objective signs and such symptoms as are obtainable from parents and nurses. J. F. ERDMANN (N. Y. Med. Jour., March 19, 1904) has seen 29 cases in children under ten years of age during the past two years and reminds the profession that the most important diagnostic points to be relied upon are pain manifested by fitful crying and sleep, abdominal tenderness and rigidity of the right lower quadrant after the first few hours have elapsed; the absence of blood and bloody mucus in the stools, elevation of the pulse and temperature, usually more pronounced in children than in adults; tumor fixed and in the classical position if the illness is of several days' duration, and at this time a temperature characteristic of pus. Almost invariably the little patients unconsciously place their hand in the region of the appendix to ward off manipulations in this area. This latter sign he thinks is almost pathognomonic of appendicitis. Pneumonia and pleurisy of the type that is ushered in with lower intercostal pain is exceptionally difficult to exclude during the first day unless distinct chest symptoms are present. Should the pulse become very rapid and the face become anxious, appendicitis can be diagnosticated, while, if the breathing becomes accelerated, the face flushed or livid, although the abdomen be tense and distended, pneumonia is to be considered. He believes that when appendicitis is once diagnosed the patient is always in danger till the organ has been removed and hence he advises an operation in all such cases.

Wound Infection from Speaking at Operations.—The idea that infection of an operative wound may take place from the air expired by the operator has been practically abandoned. The possibility that infection may result from the minute particles of saliva which are extruded by most persons during speech, has led MENDES DE LEON (Archiv f. klin. Chir., Vol. 72, No. 4) to make some experimental observations. In a special sterilized receptacle, provided with an opening into which the operator could speak, were placed the agar plates. The culture results from a large number of trials convinced the author that during the course of an operation, a very large quantity of staphylo-, strepto- and diplococci were expelled from the mouth during the act

of speaking and so came into contact with the wound. This danger can be obviated, according to the author in two ways: Either by chemical or mechanical means. The first includes cleansing of the mouth by antiseptic solutions; the second, some means by which the germs may be caught up and rendered ineffective. The former method was found by actual experiment to be ineffective. A most efficient mechanical device was constructed, however, which consists of a double perforated metallic mask which can be closely fitted over the mouth. The space between the two perforated sheets is filled with sterile cotton and the entire apparatus may be readily sterilized. It is fastened by tapes and springs back of the ears. Repeated trials showed that the maximum number of colonies which developed on agar plates was five.

Pathology and Surgery of the Pancreas.—Virgil observed, "Drops wear away the stones, not by force but by constantly falling." The crystallized opinions of the medical profession are more difficult to wear away than the hardest trap rock. But if continual appeal will have any effect, the time will certainly come when a more liberal attitude toward surgery will be held by the average practitioner. A. W. Mayo Robson (Lancet, April 2, 1904), in concluding the third of the series of lectures on the pancreas, states that it is his fervent hope that the labor of his life, which has largely been devoted to the pathology and treatment of this organ, shall not be in vain. The symptoms produced by a pancreatic cyst are dependent on the nature of the disease producing cyst formation and secondarily and much later to the pressure exercised by the tumor. Fatty stools, azoturia, pale, bulky motions and glycosuria will be present or absent according to the amount of degeneration in the gland. It must not be forgotten that there have been numerous cases of pancreatic cysts which presented very few symptoms save the presence of the tumor. Surgeons are universally agreed as to the wisdom of draining pancreatic cysts, but occasionally the question may arise whether or not extirpation is not to be preferred. Tapping and aspiration are looked upon by the author as antiquated and ineffective methods, which are attended with more danger than the operation of incision and drainage. Von Mikulicz has so ably dealt with the injuries of the pancreas that little remains to be said. If, after an injury, however trivial, in the superior abdominal region, there be increasing anemia or evidences of peritonitis, immediate operation is indicated. As to calculus formation, it is probable that it never takes place in a healthy pancreas; like gall-stones, pancreatic contusions are the result of catarrh of the ducts, the stagnation of secretion, which generally, if not always, results from infection. The author suggests for this lesion the term "Pancrealithic catarrh." The calculi are very apt to be multiple and it will be invariably seen that the glands have undergone serious degenerative changes. The composition of the pancreatic calculi is important from a diagnostic viewpoint. It is well known that normal pancreatic secretion contains no calcium carbonate. In jaundiced cases the bile acids take up the lime salts to such an extent that oxalate of lime crystals have been found in only six per cent. of these cases. The very important result of this is that one is enabled to see them by the X-ray, thus differentiating them from gall-stones and diagnosing their presence. Medical treatment for these calculi is useless here as elsewhere. The typical picture of malignant disease of the pancreas may, in the author's words, be thus drawn: "A patient suffers for a time from indefinite symptoms of digestive disturbance, then jaundice appears, coming gradually but persistently increasing; the gall-bladder is usually distended and the liver is normal or slightly enlarged. A tumor may be found in the neighborhood of the pancreas. Cachexia rapidly develops and in some cases pain disturbs the patient's rest. There is soon a feeling of intense prostration and weakness. The feces are massive and contain fat or fat-acids and an undue proportion of undigested muscle fiber. The urine contains albumin frequently and sugar and fat rarely. The whole clinical course is run, as a rule, within twelve months and, after the appearance of jaundice, within from six to eight months."

Perineal Litholapaxy.—This operation, which was originally described by Keith in 1892, has not met with the success which its advantages should justify. Litholapaxy in children is always a somewhat anxious undertaking. A. Hooton (Brit. Med. Jour., April 9, 1904) states that many authors indicate the performance of the perineal operation under some or all of the following conditions: (1) A large stone necessitating the use of a lithotrite which will not pass easily by the natural route. (2) A very hard stone necessitating the passage of a similar instrument. (3) Stricture in conjunction with a large or hard stone or perhaps of any stone. (4) A difficult or narrow urethra. (5) Imperfect equipment. (6) Cases in which litholapaxy has been commenced in the ordinary way but cannot be completed satisfactorily owing to swelling of urethra and deposit of débris. The operation differs somewhat from that of lithotomy. A curved staff with a median groove is introducted into the bladder. The scrotum is allowed to assume its natural position. A very small incision is now made with the point of a tenotomy knife, in children about one inch in front of the anus through the median raphe and the urethra, incised for one-eighth of an inch. The point of an ordinary director is inserted through the wound and passed into the bladder, which is then dilated up to the required size. The evacuating catheter is now passed, the bladder injected and the lithotrite follows without difficulty. The operation is completed in the same way as in ordinary litholapaxy, and, as a rule, there is no difficulty in retaining fluid in the bladder. In order to avoid a valvular aperture, it is most important that the skin should not be displaced while making the incision, but should be left to hang in its normal condition. This method has never been intended to replace lithotomy, which will always remain the operation of choice.

Bone Suture with Silver Wire.—The objections to the use of this material have always been centered in the possibility of postoperative infection. It seems as though the two places in the body where non-absorbable suture material could favorably be employed are the intestines and the bone. The fear, however, has always been in the case of the latter, that great difficulty and annoyance would be experienced in removing the suture should infection occur. This has led to a rather wide use of catgut, which has been chromicized for a sufficient length of time to enable it to resist absorption almost indefinitely. While there can be no absolute necessity for inserting a metallic body in a joint which ultimately is going to heal to be stronger than any other portion of the bone, like the joint of a plumber's pipe, yet it is confessedly advantageous during the first few months of healing to have some strong fabric discounting the differential muscle traction. H. Grisson (Zntrlbl. f. Chir., March 19, 1904) presents a very clever method for tying silver wire, which has been used to maintain the juxtaposition of broken bone, and which cannot fail to give great delight to those who feel that wire is indispensable for the treatment of these conditions. The technic is simply to tie two knots in the course of the wire at a sufficient distance apart so

that when one is against the bone, the other will lie beyond the soft parts. The suture is then carried in the usual manner through one bone from above downward and from below upward through the other. The needle end is then cast about the proximal knot, which is slightly raised from the bone. It is then pulled through with a pair of forceps and left in the form of a loop, the loose extremity hanging out of the wound. This clever form of knot cannot possibly untie. The more tension placed upon it the tighter does it become. Should suppuration occur, the technic of removal is very simple. One simply draws upon the unknotted end, which has been carried alongside of the knotted end well out beyond the skin wound, until the loop is felt to be released. Gentle traction on the knotted end will without difficulty remove the entire suture without injury to the soft parts.

THERAPEUTICS.

Prophylaxis of Gonorrheal Ophthalmia.—Since Credé has introduced his valuable silver nitrate instillations, gonorrheal ophthalmia has almost disappeared from institutions but is still common in private practice, since midwives do not generally practise the method. The original instructions are still followed except that a one per cent. solution is generally employed, as irritation is less liable to follow. D. DAUBER (Münch. med. Woch., Feb. 16, 1904) states that many attempts have been made to substitute some less irritating silver salt for the nitrate. Protargol in 20 per cent. solution and silver acetate in one per cent. solution have been tried extensively, but the results are not much better than with the nitrate. Even where the silver acetate was followed by sodium chloride the percentage of silver-catarrh was greater than with the nitrate. As the cases of blindness secondary to puerperal gonorrhea are still very numerous, it is absolutely essential to instruct midwives in the proper care of the eyes after birth.

Olive Oil in Diseases of the Stomach.—Since the operative treatment of pyloric stenosis has on the whole been unsatisfactory—some of the best surgeons still report 16 per cent. mortality after gastro-enterostomy—every new internal method demands a careful trial. P. COHNHEIM (Zeitsch. f. klin. Med., Vol. 52, Nos. 1 and 2) has seen excellent results from large doses of olive oil; in spastic stenoses an absolute cure will follow, while in cicatricial stenoses more relief is obtained than after any other method, provided complete atresia does not exist. Good effects are even seen in pyloric cancer for the oil easily passes the narrow opening and acts as food. It is best to wash out the stomach in the morning and then to introduce 100 to 150 c.cm. of the warmed oil; after this patient lies down on right side—and fasts for an hour. If the patient does not completely lose his pains during the day, he is instructed to take 50 c.cm. before retiring. Later in the treatment the patient also takes the morning dose himself; a wineglassful one hour before breakfast and one to two tablespoonfuls one or two hours before dinner and supper will then suffice. In mild cases an emulsion of almonds may be substituted for the last two doses. In purely hysterical spasm relief is not generally seen, so that the oil may be occasionally employed to decide the diagnosis. After-effects, such as eructations and diarrhea are rare and only few complain of the taste. It will often be possible to avoid an operation with doubtful outcome, if the oil cure is employed systematically.

New Laxative—Purgatin.—Ebstein reported some two years ago his favorable observations on purgatin as a laxative devoid of any of those unpleasant results, such as abdominal pain, nausea, tenesmus, etc., that are so characteristic of this class of drugs. To determine the real nature of the drug STRELKOFF (Roussky Vrach, No. 9, 1904) administered it to some 26 patients suffering from various diseases of the gastro-intestinal tract. His conclusions are as follows: (1) The drug does possess laxative properties, but rather to an inconsiderable degree; (2) it is tasteless; (3) it does not liquefy the feces. These few advantages are more than counterbalanced by the fact that the drug is apt to cause pain on urination, tenesmus, severe abdominal pains prior to evacuation of the bowels, tenesmus and pain during evacuation, nausea, borborygmus, diarrhea, etc. As small doses fail to cause the desired effect, repeated administration of the drug must be resorted to and this is apt to cause the above unpleasant symptoms. A purgatin habit is quickly established and patients require larger and larger doses. In short, without enumerating the other disadvantages presented by the author, it may be safely asserted that the drug forms no valuable addition to our arsenal of vegetable laxatives.

Practical Method of Destroying Snake Venom.—It is remarkable how broadening an influence upon the relatively small field of medical work, the acquisition of our colonial territories has had. L. ROGERS (Lancet, Feb. 6, 1904) describes a practical method of treating any kind of snake poison which promises to be of great value in all cases seen early. It is so simple that any intelligent person can carry it out. Calmette's serum is not strong enough to counteract full doses of colubrine venoms. Furthermore, it is seldom at hand when wanted and also, unfortunately, it tends to lose its strength in a hot climate. It is useless for viper bites. It becomes obvious that in a country which is infested by snakes of different species, many of whose bite means death, it is impossible to carry around with one a sufficient number of vials containing antitoxin for each snake. Again, it is not always possible for the victim to be certain of the species of snake which has bitten him. A method which shall destroy the poison locally at the seat of its injection is therefore more practical than that which deals with it after its entry into the circulation. Permanganate of potassium, as shown by Blyth, is the best known of these substances. Brunton, who injected strong solutions of this substance at the seat of the insertion of the poison, was unable to prevent death by this means. He and Fayrer, however, have recently suggested a more radical method of using permanganate. They advise ligation above the inoculation, then incision of the wound followed by the rubbing of pure crystals of the salt. The author has endeavored to discover whether the permanganate will destroy the venom of other snakes than the cobra. Ten to twenty times the lethal dose of poison mixed with very small fraction of permanganate gave positive protective results. It is positively established that the salt will destroy *in vitro* nearly its own weight in every class of snake venom. It is possible that the free pouring out of lymph in the neighborhood of the wound will sufficiently retard the absorption of the venom so that a half hour or more time may elapse from the infliction of the bite to the rubbing in of the permanganate. If a very large dose, say fifty times the lethal amount, is injected subcutaneously into a dog's tail, and this member is cut off proximal to the seat of injection within a few seconds, the animal will still die. The reason for this is that one fatal dose may be absorbed out of such a large quantity almost instantaneously. At the suggestion of Sir Lauder Brunton, a lance has been made surrounded by a sheath in the base of which permanganate crystals are kept, the whole outfit being easily carried in the corner of the vest pocket.

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BABIES AND HOT WEATHER.

The Health Department of the City of Rochester, N. Y., has issued a little circular, entitled "How to take care of babies during hot weather," which is evidently meant for distribution in crowded districts of the town. It is such an excellent compilation that we feel we should call attention to it, since other boards of health throughout the country may wish to imitate Rochester's provident example, and they will find in this pamphlet much that is suggestive, nothing that is not eminently practical.

The outside cover bears the legend "no other food, not even a wet-nurse, can take the place of milk from the child's own mother." In these modern days when a trivial excuse is sometimes considered quite enough to justify the weaning of the baby and when even physicians do not seem to be sufficiently impressed with the fact that nothing can ever make up entirely for mother's milk, it is well that this item of our present-day conclusions in medicine should be brought prominently before the public for its serious consideration.

Another excellent feature is found at the foot of the outside cover. In large capitals are the words "Give the Baby Water." There was a time not so long since, when babies practically never received simple, plain water. To-day it is a difficult matter to persuade some mothers that children should be given water several times a day. There are families, fortunately rarely met with in this country, in which when the child cries for a drink in hot weather it must take a full meal of milk in order to obtain the drink. Streaming with perspiration, the little one is taken up from its warm bed in the summer-time, crying because it is thirsty, and instead of being given water is given milk or the breast. Somehow the custom, common enough three generations ago, of providing water for baby, has gone out, except where the modern teaching of the necessity of water has been especially insisted on.

Not a few of the babies who suffer from constipation do so mainly because of the fact that not enough liquid is supplied to them to make their food sufficiently dilute so that peristalsis shall have a fair chance to move it easily. This did not mean so much when houses were warmed by fireplaces, as there was a constant draught of air from outdoors carrying a steady amount of moisture with it. Now, in steam-heated houses the necessity for water, even in winter-time, for children, is easy to understand, and in summer-time it is little less than the worst form of cruelty to deny it to them.

With such good points on the care of children on the outside of the little pamphlet it is not surprising to find that the inside is full of excellent suggestions. To keep a baby well, is the first paragraph and it consists of these short sentences: "Give it pure air day and night; give it no food but mother's milk, or that directed by physicians; when it cries or is fretful do not offer it food, but give it water; be sure that it gets enough sleep, two naps during the day at least; do not put too much clothing on it; bathe it in a tub every day; don't handle it. Let it alone." These are expanded in successive paragraphs. The necessity for having a window open in the baby's sleeping room at night and during the day, is insisted on. Then, also, the danger of overnursing or overfeeding and the necessity of stopping food soon as the first symptoms of diarrhea present themselves is urged. Regular feeding is emphasized and in capitals the expression, "*Feed it by the clock*," ought to attract sufficient attention to make readers realize its importance. Finally feeding according to age is made a feature. The chapter closes in this wise, "Never let the bottle stand with milk in it. Never use a bottle with a long rubber tube."

To our mind the most important paragraph in the book is that with regard to baby's sleep. The question of the proper sort of bed is discussed, and the use of feathers, in any form, whether in pillow or in the mattress, is rejected as entirely out of place, especially in summer. Wool or cotton must, for the same reason, be considered unsuitable. The very practical suggestion is made that babies' beds should be made of excelsior covered with cheese cloth. These materials are cheap and easy to obtain and when the mattress becomes soiled in any way, it may be thrown away and another one made without delay or cost. It is easy to understand that such a bed is at once clean and comfortable. The Rochester Board of Health, of course, is considering city life, but in country places such a mattress might be filled with corn husks or other suitable material, easy to be obtained on farms. The objection that will occur in most mothers' minds at once is that this is entirely too rough for baby and will injure its delicate skin. As a matter of fact, baby's skin will be much healthier with the opportunity for transpiration and perspiration afforded by such a mattress than by anything that presses close to its body and prevents the proper functions of the skin during the many hours that baby must pass in bed.

Letting the baby alone is recommended as the best possible way to prevent its suffering from the heat, more than is absolutely inevitable. When baby is ill, the place for it is not in mother's nor nurse's arms, but in its bed. Just because it happens to be fretful is no reason at all why it should be petted and jostled by being carried. When it is well it should be allowed to lie in bed so much as possible without much clothing on, so as to enable it to exercise its limbs freely. It is surprising how early in a baby's life it learns to play, if left to its own devices. When it is to be put to sleep, if put in its bed, it will go to sleep as a rule without rocking after a short preliminary cry. Crying is not a signal for it to be made still more uncomfortable in hot weather, by being carried in nurse's arms. Crying is, as the Board of Health points out, only one form of exercise of the lungs in children and when they are a little older they will make themselves a nuisance by still further exercising this function, but it should not be considered as something that must be stopped at all hazards.

While there are many suggestions herein that might not meet with the approval of mothers of large families, the advice is simple and practical.

PATIENT—PHYSICIAN—PHARMACIST.

In our Correspondence columns this week (p. 1040) we publish an important contribution that is of vital interest to every physician in the State of New York, if not in the United States.

By the ruling of Judge Gaynor, herein cited, two principles are laid down as good law. In the first place the competency of the medical practitioner as an expert in the knowledge of the action of drugs is considered secondary to that of a drug clerk, and secondly, an apothecary can, whenever he sees fit, substitute in a physician's prescription something "just as good" and receive legal sanction, if not approval—from Justice Gaynor at least.

The evils of substitution are too well known and recognized by all of us to need much further comment; yet, in the present instance, we find a drug clerk substitutes morphine and heroin for heroin alone, and yet this does not seem to strike the judicial mind as anything to be condemned.

The larger evil, however, resides, we believe, in the acceptance of the testimony of a druggist as relevant and as competent as to what constitutes a poisonous dose for a particular patient and the rejection of the testimony of the attending physician on the same issue.

We have never heard of an instance in which the testimony of a druggist, and an interested party in addition, who does not know the patient nor the nature of the illness, has been considered more relevant by a court of law than that of the family physician who by education, training, and special knowledge, is entitled to speak with authority concerning the case in hand. In the present issue such is the attitude taken by the learned judge.

Shall the courts uphold a violation of the legal relations which exist between the physician, the pharmacist, and the patient? If so, the physician must retire and leave the patient to the authority of the drug clerk, which Justice Gaynor holds higher than that of the practitioner of medicine.

Such a condition is intolerable.

ACUTE OSTEOMYELITIS.

This important affection has at last attained its proper place in nosology. It is still occasionally mistaken for acute articular rheumatism, especially in children, and this, too, at a time when delay is dangerous but ever more and more, in recent years, physicians and surgeons are successfully on their guard against such erroneous diagnoses. An element of difficulty in early recog-

nition of the disease is that no hint of the fact that the preceding affection to which it is secondary is about to affect the bone-marrow is ever given. It may occur after the simplest forms of infection. After a whitlow that runs a mild course, after a boil or furuncle that is no severer than hundreds of others that have been under observation without any sequela, or it may even be subsequent to an attack of typhoid fever that took place months, or even years before. As delay may be very dangerous, it is easy to realize how much this feature of lack of premonition may mean and how important it is not to disregard the slightest sign.

The most important form of the disease is acute infectious osteomyelitis, which is treated of very completely by Edward H. Nichols, in the *Journal of the American Medical Association* of February 13, 1904. To those who are unfamiliar with recent investigations into the etiology of acute osteomyelitis, it will be somewhat of a surprise to learn that the affection is usually due to the staphylococcus. The *Staphylococcus pyogenes aureus,* is more often present in pure cultures than either *albus* or *citreus,* though the *aureus* perhaps produces, at least according to the experience of French writers, more serious lesions. Staphylococci are usually not looked upon as very malignant organisms and are, when compared to the streptococcus, considered not to be especially destructive. In the bone-marrow, however, these properties of the two forms of microorganism are reversed. The *Streptococcus pyogenes* seldom produces such severe lesions as the staphylococcus. It always has a tendency to remain more superficial than the other, and, as a consequence, not infrequently invades neighboring joints or causes separation of an epiphysis.

Acute osteomyelitis, due to staphylococcus, may follow a cutaneous furuncle. It has itself been designated picturesquely as "a furuncle of the bone-marrow," and this is thoroughly descriptive of the pathological condition which is present. A peculiar form of the disease, though running a course not unlike that produced by the staphylococcus, is due to an infection by the pneumococcus and occurs subsequent to a pneumonia or a severe pleurisy with effusion due to infection directly from the lung, or to an empyema.

With this knowledge of the etiology it is easy to understand the necessity for prompt operation. The toxins of the disease soon cause severe ravages in the body unless the focus of infection is promptly removed. It has sometimes been suggested that drainage of the abscess of the bones and of the soft parts above the bones is sufficient as a preliminary operation. As Dr. Nichols insists, however, the bone-marrow itself is infected and must be drained. In a very early stage of the disease, however, to make extensive removal of bone is not necessary, and much less advisable. All that is necessary is to give perfect drainage to the bone-marrow. At this stage even curettement may do more harm than good and the bone may recover and repair the defect without the formation of a sequestrum.

The best results can be obtained not by trying to accomplish complete removal of the focus of inflammation at the time of the first operation, but after the establishment of drainage and waiting for a couple of months to undertake a second operation for the removal of whatever necrosis may have taken place. Dr. Nichols believes that from his own experience it is better to remove the sequestrum and involucrum rather than the sequestrum alone. Wherever there is dense cortical bone, its power of repair is very slight or practically absent. To leave an extensive cavity in bone, surrounded by a wall of this dense, almost ivory-like, material, is to invite failure of the operation, as the unhealthy granulations lining the cavity have no proper tendency to close.

A complete removal of a portion of the shaft of the bone is often the best possible technic. The excision must be carried sufficiently far into the normal shaft to get well above the medullary canal wherever it is occluded by dense ivory bone. The limits of excision must reach into vascular bone-marrow, otherwise the results hoped for will either not be obtained at all, or will be obtained so slowly as to be very discouraging.

ECHOES AND NEWS.

NEW YORK.

Women's Hospital Cornerstone Laid.—The cornerstone of the new Women's Hospital, on One Hundred and Tenth street, near Amsterdam avenue, was laid Tuesday afternoon by President John E. Parsons. Archdeacon G. F. Nelson opened the exercises with prayer, and a large gathering of members and friends of the hospital was present.

Reception Hospital at Saranac Lake.—A Reception Hospital has been incorporated to maintain a hospital in North Elba, Saranac Lake Village, in the Adirondacks, to care for confirmed consumptives. This institution is intended to relieve a class of sufferers who are turned away everywhere and who cannot be taken at the Trudeau Sanitarium at Saranac Lake because their cases are too far advanced to promise any hope of cure and because they are ill enough to need nursing. Miss Mary R. Prescott is the leader in this charitable movement, and she

now maintains a reception cottage at Saranac Lake, where this class of consumptives get the best of care, food, nursing and medical attendance, the charge for which does not begin to cover the running expenses. Miss Prescott assumes the responsibility for the deficit and her work is much praised by Dr. Trudeau, who with Dr. Edward R. Baldwin, John Harding and Oliver Prescott, Jr., of Dartmouth, Mass., are the managers of the new hospital.

Dr. Cook, President of Police Surgeons.—At a meeting of the Board of Police Surgeons in Police Headquarters, Dr. Stephen E. Cook was elected President of the Board for the eighteenth time. Though it had been the custom of the Board to choose its own President, Commissioner Greene appointed Dr. Edward T. T. Marsh, the chief executive of the body. When Mr. McAdoo became Commissioner he said he would let the Board of Police Surgeons manage their own family affairs. Dr. Marsh will retire on a pension soon.

Report of New York Deaf and Dumb Asylum.—The annual report of the above institution shows that 464 pupils have been cared for during the past year. Of these 204 were congenitally imperfect, and 93 before the age of two years. The causes are set down as follows: Basilar meningitis, 36; brain fever, 34; scarlet fever, 30; measles, 18; the rest from indifferent causes of various kinds.

Odell Approves Bill for New York Reception Insane Hospital.—One of the surprises which came out of the legislative chamber last week was the approval by the Governor of Senator Foley's bill authorizing the City of New York to acquire a site and to lease it to the State for the establishment thereon of a reception hospital for the insane, and authorizing the State Commission in Lunacy to erect such a hospital. Gov. Odell had feared that the bill carried with it an appropriation of $300,000.

Spread of Fatal Spotted Fever.—Dr. Hermann M. Biggs, in charge of the Bacteriological Department, said Wednesday that there were 97 deaths from this disease last week. From various diseases there were 150 deaths in the week. Last year in the corresponding week there were 36 deaths from spotted fever. Spotted fever has steadily increased since March 1. Not since 1872 has there been such an outbreak. According to Dr. Biggs, the disease at present is almost always fatal. Until recently the disease was supposed to attack only children, but from the statistics of last week's deaths it was found that 33 cases were of people between five and fifteen, years, 23 over fifteen years, and the remainder under five years. The Department of Health, to aid in trying to fight the disease, has offered to place at the disposal of all hospitals and medical practitioners the service of its laboratories for the diagnosis of cases. The germ is known as meningococcus. Dr. Biggs said that in cases of spotted fever attending physicians should send specimens of the germ obtained from patients to the department for a bacteriological examination.

Diagnosis of Spotted Fever.—Owing to the prevalence in the city of epidemic cerebrospinal meningitis, the Department of Health offers to place at the disposal of hospitals and medical practitioners the service of its laboratories to aid in the diagnosis of this extremely fatal disease. The meningococcus (*Diplococcus intracellularis meningitidis* of Weichselbaum) is found in the cerebrospinal fluid of the majority of cases and usually also in the nasal secretion. The Department of Health will examine free of charge specimens of cerebrospinal fluid, as well as smears of, and cultures from, the nasal secretion. Such examination will in many instances assist in the early recognition of the disease and in determining the nature of obscure cases. Special outfits, consisting of a blood serum culture tube, a sterilized swab, and a glass slide for the smear, can be obtained at the Department of Health, Fifty-fifth street and Sixth avenue. After obtaining the specimens, they should be sent at once to the Department. Reports will be sent by telephone and mail. Specimens of cerebrospinal fluid can be readily obtained by lumbar puncture, a simple operation easily performed by the attending physician himself, or any surgeon. The operation, in addition to being an aid in diagnosis, is directly beneficial because of the relief of the intraspinal pressure.

Summer Health Corps.—Health Commissioner Darlington said last week that the Governor's veto of the bill for an increased bond issue might so curtail his arrangements for sending out the usual summer tenement house squad as to result in a five-per-cent. increase of the death rate.

"We cannot plan for our special summer work," said Dr. Darlington, "until we know how much money we shall have to carry it on with. Of course this cut in funds is likely to fall most heavily on other departments, but it may affect us as well. We hope it will not, but if it does it means five or six per cent. more on the death rate."

In June of every year a special squad of physicians is organized by the Board of Health to work among the tenement house population, particularly among the children. Last year 75 physicians put in two months and a half at this work. To show the necessity for this extra summer work, Dr. Darlington gives a few figures. For the seven years ending in 1872 the death rate among children under five years was 133 per thousand. This loss has been reduced to 56 per thousand in the last seven-year period. Much of this improvement is due to the rigid milk inspection and to other modern sanitary precautions. But the special corps of tenement house physicians, it is estimated, save annually 20,000 lives of children that would have died under the careless system of a generation ago.

Gift for Manhattan Eye and Ear Hospital.—A gift of $40,000, just pledged by Edward R. Thomas, son of the late Gen. Samuel Thomas, to the Manhattan Eye and Ear Hospital has saved the directors of that institution from the loss of $125,000 in conditional donations. The directors, although they had raised the rest of the amount, felt rather apprehensive about the $40,000 which was lacking, until Mr. Thomas came to the front with his donation. The latest gift by Mr. Thomas is given as a personal memorial to his father. The Thomas family last year gave $50,000 to the same hospital to endow a ward, to be known as the "Samuel Thomas Memorial Ward." The announcement of Mr. Thomas's gift was made on Tuesday last while a meeting of the Board was being held by Dr. Walter F. Chappell. The latter, while paying a professional visit to the home of Mr. Thomas, happened to mention the predicament the hospital directors were in, and Mr. Thomas then and there pledged himself to come to their relief. Steps will immediately be taken to purchase the land for a new building. A site has already been chosen within a block of the projected Rockefeller institute for research in East Fifty-ninth street.

New York Psychopathic Hospital.—New York is to have its psychopathic hospital, says *Charities*. Governor Odell is to be commended for withdrawing his proposed veto of Senator Foley's bill, authorizing the city of New York to acquire a site and lease it to the State for the establishment of a reception hospital for the insane, to be erected and maintained by the State for the preventive and curative treatment of patients from the metropolitan district. As the Governor in his annual message to the legislature of 1903, and on several

other occasions had expressed himself as in hearty accord with the plan of the State Commission in Lunacy to establish such a hospital, and as the bill had been signed by Mayor McClellan, it was felt that the favorable opportunity for action afforded by the agreement of the city and the State authorities should not be lost. The Governor seems to have feared that the expenditure authorized for the erection and equipment of the hospital would necessarily come from the appropriation for new buildings, repairs and improvements made by the legislature of 1904, which is all needed for the relief of the overcrowding now so unfortunately prevalent at all the State hospitals. As the project requires concerted action by many different city and State authorities it seems extremely unlikely that the actual work of construction will be begun this year. An idea of the red tape which will have to be unwound is indicated by a capitulation of the steps which, under the bill, will need to be taken: (1) The city, having decided to act under the bill, must select the site. (2) The site must be approved by the State Commission in Lunacy. (3) The site must be acquired by the city by purchase or by condemnation proceedings. (4) The city's title to the site must be approved by the Attorney-General. (5) The lease of the site by the city to the State must be approved by the Attorney-General. (6) The State architect must prepare plans and specifications. (7) The plans and specifications must be approved by the State Commission in Lunacy. (8) The plans and specifications must be approved by the Governor. (9) The specifications must be printed and advertised for bids for a considerable period. (10) The State must then erect the hospital out of any moneys appropriated for new buildings, repairs and improvements for the State hospitals.

This procedure is so complicated that it seems very important that a beginning should be made this year. Even so, the most sanguine can hardly expect to see any building operations actually under way before its close. Too great stress has been laid upon the cost of the proposed institution. Bear in mind that it promises to be, in the long run, a source of great financial saving to the State, for if it succeeds in checking the alarming increase of insanity by its preventive and curative treatment of incipient and acute cases, it will save the State an enormous outlay for buildings and maintenance. Remember that taking into consideration the wealth-producing value of an able-bodied and able-minded citizen and the cost of providing accommodation and care for an insane patient, every person discharged cured means an estimated saving or gain to the State of about $500 a year. Then it is possible to realize what an increase of cures will mean in the wealth, as well as in the health and happiness of the people of this State. The State of New York is to be congratulated upon being the first to sanction the adoption of the most scientific and humane methods of treating the victims of a disease which ranks only second to tuberculosis as the greatest scourge of modern civilization. The administration of Governor Odell will long be remembered for its enlightenment in making possible the initiation of a new era in the treatment of the insane in this country. The members of the Board of Estimate and Apportionment of New York City will do well to forward the movement made possible by Mayor McClellan's approval of the bill providing for cooperation between the city and the State, and carry into effect the city's share of the provisions of the law by taking immediate steps toward the acquisition of a site that shall be centrally located.

Manhattan Dermatological Society. — Regular monthly meeting held on Friday evening, May 6, 1904, at the residence of Dr. Edw. Pisko; Dr. I. P. Oberndorfer presiding.

The following cases were presented: By Dr. Oberndorfer, a woman aged fifty-four years, with a lesion on chin and adjacent part of neck. Began last July on chin and gradually spread to neck; the lesion is indurated; its outer border being extremely hard; the center shows numerous papillary excrescences; a somewhat similar indurated patch is seen near the clavicular insertion of the right sternocleidomastoid muscles; presented as a case of morphea; this diagnosis with some reservation. Dr. Pisko thought it resembled the early stage of skin epithelioma; he fails to see any characteristic signs of morphea. Dr. Abrahams suggested large doses of KI for diagnostic purposes; to him the diagnosis was not so clear; it certainly does not resemble morphea. Dr. Gottheil regards it as a localized scleroderma. Drs. Cocks and Sobel express no opinion. Dr. Weiss said the cartilaginous hardness, papillary growths favored diagnosis of malignant tumor; the patch near sternum was undoubtedly a sign of metastasis; he termed the growth carcinoma lenticulare.

Dr. A. Bleiman showed a boy of six years, who at the age of six weeks exhibited signs of infantile eczema; the eczematous patches spread all over the body and during the first 3½ years of life at no time was the skin ever perfectly clear; at the age of four years, child underwent an eight weeks' course of treatment at the New York Skin and Cancer Hospital and was discharged cured; one month later the process broke out again and since that time the skin never cleared; six months ago, when first observed, patient showed the typical shotty papules, buboes, indurated and infiltrated skin and eczematous condition, confined chiefly to extensor surfaces of upper and lower limbs; presented as a case of true prurigo; the classical picture of the condition being considerably modified, the result of treatment of interest was the patches of atrophy shown on extensor surfaces of lower arms and legs. Dr. Pisko said the case was one of prurigo (Hebra). Dr. Gottheil likewise called it prurigo; the eczematous element was considerably exaggerated in this case. Dr. E. L. Cocks said he saw the case when it was under treatment at the New York Skin and Cancer Hospital, the diagnosis then made being general infantile eczema; there was marked itching, secondary infection, superficial ulceration and consequent atrophy, as now presented in patient; judging by the subsequent history and present appearance he likewise inclines to call it a prurigo. Dr. Oberndorfer failed to see the typical prurigo papule nor the indurated skin of the lower limbs; he knew of chronic relapsing eczemas which resembled this case. Dr. Weiss said six months' treatment would tend to alter the original condition; if the classical signs of induration, localization papules and buboes were present then, he would not hesitate to call it prurigo. Dr. Sobel thought we had to deal with a chronic eczematous condition in a scrofulous child.

Dr. Pisko showed a case of lupus erythematosus, illustrating the beneficial results obtained by the use of local applications of pure trichlor. acetic acid. He also showed a light negress with verrucous-like lesion of chin; present about one year and not under treatment during that period; patient acknowledges infection and dates initial lesion back fourteen years; presented as a case of lues. Dr. Weiss would not make a diagnosis of lues on appearances only; he said lesion was not typical. Dr. Oberndorfer does not consider this type of lesion as uncommon.

Dr. L. Weiss presented a girl of thirteen years, showing an irregular granulating patch on right cheek, about 1½ inches square; this lesion was of one year's dura-

tion; other lesions on cheek of long standing (but now healed) are recognized by scar tissue. Presented as a case of scrofuloderma.

Dr. W. S. Gottheil presented a case of tuberculosis cutis: the face and neck showed involvement; old lesions on face healed with resulting scar; the latter extensive and deep, adherent to bone; the condition is present about six years; it began on the neck; another lesion is seen on the left lower leg. Treatment consisted of Finsen light exposures, giving three-quarter-hour sittings three times a week. Dr. Weiss, in comparing this case with his own, stated that multiple lesions of this kind (Gottheil's case) speak for lupus; where the loss of substance was superficial, he would use the term tuberculosis. Gottheil's case he termed lupus serpiginosus exulcerans.

Dr. Gottheil also showed a case of triple chancres of the lip in a female; roseola on body. He also showed the following photographs: (1) Acne cornea (microphotos of sections); (2) lupus vulgaris; (3) chancre of lip; (4) tuberculosis cutis; (5) dermatitis exfoliativa; (6) bromoderma tuberosum.

PHILADELPHIA.

Decrease in Contagious Diseases.—The new cases of contagious diseases for the past week were 166 less than during the preceding seven days. The principal reduction was in typhoid fever which fell from 295 to 182 cases. Smallpox dropped from 27 to 11 cases and scarlet fever from 100 to 65 cases.

Charters for Medical Institutions.—The People's Hospital of Frankford has applied for a charter. No site has been selected for the building. The White League, an association for the treatment of tuberculosis, has also made application for a charter. The object of the League is to treat tuberculosis by modern means and also to furnish employment for the patients.

Women's Medical College.—At the fifty-fourth annual commencement held recently a class of 43 was graduated. The alumnæ now number 1029. A bronze tablet erected in the gymnasium to the memory of Dr. Susan P. Stackhouse was unveiled with appropriate ceremonies.

Dr. Oliver a Guest of the British Medical Association.—Dr. Charles A. Oliver, of Philadelphia, Pa., has been chosen by the British Medical Association as its official guest from the United States for its seventy-second annual meeting, which is to take place in Oxford, England, in July. With him are associated Prof. Hirschberg, of Berlin, representing Germany, and Dr. Javal, of Paris, representing France. During his stay Dr. Oliver will reside at Keble College as the personal guest of Mr. Robert Walter Doyne, the President of the Ophthalmological Section of the Association and Lecturer on Ophthalmology at Oxford University.

Philadelphia Hospitals' Association.—The meeting of this association on May 16 received the report of a special committee condemning the milk supply of many of the hospitals of the city. As a result several of the institutions have made arrangements for the bacteriological or chemical test of their milk. At the same meeting Dr. Lawrence F. Flick made an argument in favor of the treatment of the tuberculous by the general hospitals. He finds that there is an average daily vacancy of 1,600 beds in the various institutions, this being about the number needed by the city for the proper care of its tuberculous. The hospitals should admit curable cases and the city provide their maintenance.

Witch Doctors to be Eradicated.—It is stated that the Berks County Medical Society and the State Medical Board contemplate a crusade against the witch doctors of Eastern Pennsylvania. These "voodoos" are patronized in Berks, Lehigh, Bucks, Lancaster, and Dauphin counties. Many charms have been collected as evidence against these crafty individuals who secure fat fees by putting aright the cases of "Hexerei" as they are known. The practice is based on a small book of charms and queer incantations as remedies written some eighty years ago by J. G. Hohman, a pioneer witch doctor of that region.

Jefferson Medical College.—A class of 169 was graduated at the seventy-ninth annual commencement held May 27. The degree of LL.D. was conferred on Prof. Dr. Albert Hoffa of the University of Berlin. Dr. Hoffa was the guest of honor at the alumni banquet held May 26, and on the same day gave an orthopedic clinic at the Jefferson Hospital. To perfect the faculty organization of the college the trustees have advanced to full professorship, with seats in the faculty, the following clinical professors: Ophthalmology, Dr. Howard F. Hansell; clinical surgery, Dr. W. Joseph Hearn; dermatology, Dr. Henry W. Stelwagon; orthopedic surgery, Dr. H. Augustus Wilson; diseases of children, Dr. Edwin E. Graham; genito-urinary surgery, Dr. Orville Horwitz; otology, Dr. S. MacCuen Smith; laryngology, Dr. D. Braden Kyle; clinical medicine, Dr. Solomon Solis-Cohen, and physiology and hygiene, Dr. Albert P. Brubaker. In addition to these changes, Dr. John H. Gibbon, surgeon at the Pennsylvania Hospital, was elected associate professor of surgery. Dr. Randle C. Rosenberger, assistant professor of bacteriology, and Dr. Aller G. Ellis, associate in pathology.

Prof. Munyon Must Pay $20,000.—In their suit to recover $50,000 damages from Munyon's Homeopathic Remedy Company, Rebecca E. and Peter B. Sprenkel received a verdict for $20,000 in the Court of Common Pleas. Mrs. Sprenkel, who was brought into court on a stretcher, declared that she was injured by the treatment given to her by Dr. W. S. Moat, one of Prof. Munyon's assistants. Physicians for the defendants swore that the treatment was the one prescribed by medical authorities.

Faculty Reorganization, University of Pennsylvania.—A plan for the reorganization of the Faculty has just been approved by the Board of Trustees, whereby the Faculty membership has been extended to the Clinical, Associated and Assistant Professors, to the Associates and Lecturers and to limited representation from the subordinate staff. The scheme provides for an executive body or Council, to be composed of the heads of the Departments in the fundamental subjects and two representatives of the Specialists. The plan will be put into effect September 1, 1904.

University's New Laboratories.—On Friday, June 10, with exercises commencing at 4 o'clock in the afternoon, the University of Pennsylvania will dedicate a new medical laboratory on the south side of Hamilton street, between Thirty-sixth and Thirty-seventh streets, on the site of the old Veterinary Hall and Hospital. The building is two stories in height above a high basement and measures 337 feet in front by nearly 200 feet in depth. The long front faces north, securing a maximum amount of the best light for laboratory purposes. In completeness of equipment this new building is without a rival. It provides for the teaching of students and the carrying on of research work on physiology, pathology and pharmacology, in which departments of medicine the greatest advances have been made in the past, and may be predicted for the future. The exercises comprise a procession of students, faculty, and guests from Houston Hall to the new building, where the following program will be carried out:

Presentation of building and opening of laboratories; presentation to the Trustees by J. Vaughan

Merrick, Esq.; acceptance on behalf of the Trustees by C. C. Harrison, LL.D., Provost of the University. Formal addresses in the Laboratory of Pathological History by Professor H. P. Bowditch, Professor of Physiology, Harvard University; Professor R. H. Chittenden, Director of the Sheffield Scientific School, Yale University; Professor George Dock, Professor of Medicine, University of Michigan; and Professor Horatio C. Wood, Professor of Therapeutics, Materia Medica and Pharmacy, University of Pennsylvania. The first floor of the new laboratories is to be devoted to physiology and pharmacodynamics. The department of physiology on the first floor will have provided one large room in which there will be ninety cabinets, fully equipped with such apparatus as is required in the practical exercises in physiology carried on by the students. The department of pharmacology has also been provided for on the first floor. This contains a large laboratory for practical pharmacodynamics; a large laboratory for practical pharmacy, a museum, a library and various rooms for the instructor and his assistants for research work, etc. The second floor will be devoted exclusively to pathology, with temporary accommodations for a number of the professors of other departments until the completion of future building operations rendering possible the final transfer of the entire medical school to buildings adjacent to the present new building. The entire north front of the building (with the exception of the temporarily arranged private rooms for various professors and the general pathological office) is devoted to laboratories for advanced students in experimental pathology and pathological bacteriology and the special research and assistant's rooms. There are two demonstration and two lecture rooms in the building. The two demonstration rooms each seat 185 students. These rooms communicate with two preparation rooms each. At the rear of the building there are two large lecture rooms, each seating 400 students. The architecture is distinctly "Pennsylvanian," and conforms to that of the dormitory system, the new law school building, gymnasium, engineering hall, and the stadium of the university. It may justly be regarded as one of the most impresisve buildings in Philadelphia.

CHICAGO.

Big Sum for New Hospital.—Over $400,000 has been raised by the committee of eight for the erection of a new Michael Reese Hospital, and at the joint annual meeting of the Board of Directors of the United Hebrew Charities and the Associated Jewish Charities, Leon Mandel, Edwin G. Foreman, W. N. Eisendrath, Moses Born, Julius Rosenwald, Maurice Rosenfeld, Moses E. Greenbaum, and Herman F. Hahn, were appointed a building committee with power to act.

Provide for Fourth of July Victims.—Dr. J. B. Murphy was recently elected Chairman of the committee organized by the promoters of Chicago's "sane" Fourth of July to care for children and others who may be injured that day.

Nurses Given Diplomas.—At the graduating exercises at the College of Physicians and Surgeons, held May 18, twelve nurses, who had completed the three years' course at the West Side Hospital, were given diplomas.

Farm Inspection.—Dr. John C. Cook read a paper on this subject before a recent meeting of the Chicago Pediatric Society. Among other things, he said that the first requisite to good milk is good cows, and it is the opinion of milk producers that the milk from a so-called "breeder's herd" is the more valuable to both producer and consumer. First, they are better cared for; second, the farmer is constantly trying to improve his herd by disposing of the poorer ones, and replacing them with better animals. The most practicable standard for the estimation of cleanliness in the care and handling of milk is its relative freedom from bacteria, and most commissions which have taken action in this matter have tentatively fixed upon the maximum of 30,000 germs of all kinds per cubic centimeter of milk, with a minimum of four per cent. of fats and all the other characteristics of pure, wholesome milk, in order to obtain the endorsement of the commission. Dealers who incur expense and take the precautions necessary to furnish a truly clean and wholesome milk should have some means of bringing these facts before the public. He pointed out the required conditions of the premises. The whole premises used for dairy purposes, as well as the barn, must have a supply of water free from any danger of pollution with animal matter and sufficiently abundant for all purposes, and easy of access. He emphasized the importance of the milker being personally clean, also the dairy utensils, saying that the latter should be thoroughly cleansed, first, by thoroughly washing with a brush and soap, then rinsing in warm water and sterilizing with steam.

GENERAL.

McGill University.—Dr. J. T. Halsey, lecturer in pharmacology at the university, whose resignation was recently accepted, has been appointed professor of therapeutics and clinical medicine in the Tulane Medical University, New Orleans. Dr. Skane, registrar of the McGill medical faculty has been recommended to the corporation to succeed Dr. Halsey.

Queen's University Alumni Dinner.—The second annual meeting of the alumni of the Medical Department of Queen's University, Canada, was held on May 18 at Muschenheim's. About 50 members were present, all of them in active practice in this city and in Brooklyn, some having graduated so long as forty years ago. The present New York association was organized two years ago by Principal Grant, late of Queen's, and has been growing in numbers ever since. President J. R. Shannon made the opening address setting forth the purposes of the organization and urging those present to invite any alumnus to join who by any possible chance did not know of its existence. This was followed by a speech from the Principal of the University, Rev. Dr. Gordon. Toasts were given for the King and for President Roosevelt.

The American Medical Temperance Association.—The thirteenth annual meeting of this association will be held in the parlors of the Hotel Dennis, at Atlantic City, June 8 and 9, 1904, at 9 A.M. A very interesting program has been prepared including an address on the effects of alcohol on the structures of the body, by the honorary president, Dr. N. S. Davis, of Chicago, and also a review of late researches concerning alcohol as a drug in medicine by Prof. W. S. Hall, the president. Other papers on allied topics will be read by Drs. MacNichol, Crothers, Mason, Kellogg, Reynolds, Steward, Reese, Paulison, Madden, and others. The object of this association is to encourage and promote the clinical, therapeutical, pharmacological, and chemical study of alcohol in health and disease. It also aims to gather, compile and make available the studies and experiences of medical men in all parts of the country, concerning the use of alcohol, and to formulate such definite facts as can be

utilized and made available in the practice of medicine. The spirit and purpose of the association is a purely scientific one, concerning the nature and the character of alcohol, irrespective of all possible conclusions. Regular practitioners of medicine may become members by a two-thirds vote of the association after signing an application to the secretary. All persons interested in this great topic are earnestly invited to attend the annual meeting. For particulars address T. D. Crothers, Secretary, Hartford, Conn.

Professor Charles S. Sherrington's Lecture on Cerebral Localization.—Prof. Chas. S. Sherrington, M.D., LL.D., F.R.S., of the University of Liverpool, gave a lecture on May 5, in the Medical Hall of the University of Pennsylvania, on "Cerebral Localization." He explained the experiments carried out by himself and assistants on chimpanzees and orangs. After opening the skull and applying the Faradic current motor responses were most marked in the precentral convolution, while the postcentral was apparently silent. Practically the same results were obtained by ablation experiments. Conjugation of the eyes was obtained by stimulation of the frontal lobe, while the occipital gave more pronounced asymmetrical ocular movements. The complexity of the brain, as evidenced by the conformity of its convolutions, approaches somewhat closely that of the human type.

Doctors' Income in London.—Correspondence just printed in the newspapers calls attention to the smallness of the salaries paid to house physicians in London hospitals. Out of twenty examples selected, the average salary is about $370 a year, in addition to board and lodging. At St. Bartholomew's Hospital, one of the largest in London, not only is no salary paid, but the hospital doctors have to pay their own living expenses. The result in all cases is the selection of physicians according to the money they have and not through fitness, as only men possessing private resources are able to take hospital posts. There are many instances where excellent men have thus been excluded from appointments which are filled by less skilled young doctors who happen to be wealthy.

Peace in Leipzig.—The conflict raging between physicians appointed by the State and independent physicians has been settled in favor of the independents. A committee of arbitration with power will wind up all unsettled matters. The appointment of district physicians is indefinitely shelved, and families are free to engage any practitioner of medicine at five marks per year for each individual.

OBITUARY.

Dr. Frank P. Blair, of Allegany, N. Y., died last Saturday night of cancer. He was sixty-one years old and had lived in Allegany for eighteen years.

Dr. W. O. Alexander, a well-known physician of Washington, died at his home in that city last Monday in the fifty-eighth year of his age. He was a graduate of Georgetown University and was a member of the well known Alexander family of Virginia.

Dr. Thomas J. Fitzmaurice, thirty-five years of age, of Paterson, N. J., died May 20, from liver trouble. He was graduated from Bellevue Medical School in 1891.

Dr. Alvin M. Woodward, of New York City, died last Friday. He was sixty-eight years old, and was born at Dresden Mills, Me. He studied medicine at Bowdoin Medical College, but came to New York, where he was graduated from the Homeopathic Medical College. For the last thirty years he had been connected with the Protestant Orphan Asylum, Manhattan Avenue and One Hundred and Fourth street.

Dr. D. P. Jackson, aged sixty-three years, died at his home in Binghamton, N. Y., last Monday. He was one of the best known physicians in that city, and was at one time health officer there. He also served several years as county coroner.

Dr. Edwin Gaillard Mason, of New York City, died last Tuesday at the home of his father, Dr. A. S. Mason, at Hagerstown, Md. He was thirty-nine years old, received his medical degree at Bellevue, and was assistant professor of nervous diseases at the New York Polyclinic School for several years. He was editor of *Gaillard's Medical Journal* for eight years. For fourteen years he practised in New York, and since 1900 had been Vice President of the New York County Medical Society. He was also a Vice President of the Southern Society of New York.

CORRESPONDENCE.

A NEW ROUTE TO THE UTERUS.

To the Editor of the Medical News.

Dear Sir: Perhaps you may be able to find place in your columns for the following for the benefit of pelvic surgeons: A widow woman, resident of New York, lately underwent an operation for removal of a fibroid tumor of the uterus. Removal of the growth took place through an anterior abdominal incision which left the usual scar. In discussing this phase of the matter one of her female friends exclaimed that it was all wrong for her to have submitted to such an operation. "For," she said, "the best surgeons nowadays never remove a tumor that way, but reach it by cutting through the pajama, when of course there is no scar."

New York, May 13. Frederic Griffith.

IS SUBSTITUTION LEGALIZED?

To the Editor of the Medical News:

Dear Sir: The dismissal of the case of Laturen vs. The Bolton Drug Company by Mr. Justice Gaynor, one of the judges of the Supreme Court of this State, on Tuesday, April 19, is an occurrence which should be of great interest because of its vital importance to the entire medical profession. The decision of the learned justice, in the case at bar, deals directly with the question of the right of the druggist to substitute, at his will or convenience, the ingredients called for in the physician's prescription. Under this decision, the person, who in the future may suffer in consequence of such substitution, must regard his chances for the relief which he may seek in a civil action for damages, as practically hopeless, and unless he may find proper redress by having recourse to the criminal courts, there would seem to be no remedy for him against the evil of the substitution of drugs in physician's prescriptions, unless such remedy may be obtained through the means of special legislation. If the final adjudication of this case sustains the action of the learned Trial Justice, then may the druggist dispense the physician's prescription in any manner which may suit his pleasure because, the decision, as it now stands, strikes a blow which shatters to its very foundation the fundamental principle of usefulness of the physician's prescription as a specific order to the druggist, the very nature of which order should make it binding and inviolate.

The plaintiff in the action, in her complaint to the court, alleged that she sent a prescription to one of the

defendant's drug stores for the purpose of having it dispensed and that owing to the fact that a certain substitution was made in the course of its preparation, she received, with each dose of medicine administered to her, double the quanity of heroin which was actually prescribed, together with a certain quantity of morphine, which was not prescribed for her at all, and that in consequence of which substitution and addition, she was made very ill and suffered from opium poisoning.

The defendant corporation interposed an answer which admitted the substitution and which also admitted the addition of the morphine, leaving the question of the measure of damages to be determined. The matter came on for trial in the Court House at Kings County, before Mr. Justice Gaynor and a jury, on April 19, 1904. The plaintiff swore to having obtained the prescription from her physician and further testified that she gave it to her son whom she sent to the defendant's drug store for the purpose of having the prescription "put up." She testified to the fact that when her son brought the bottle, containing the medicine, to her, she took it according to directions, and that the illness followed. She produced in evidence, properly numbered and labeled, the bottle of medicine in question. The plaintiff's son testified that he took the prescription to the defendant's drug-store and that after obtaining the medicine from the manager of the store, the bottle was given directly by him to his mother.

The husband of the plaintiff corroborated her sworn statement as to her illness, further testifying that he had been in constant attendance on her during her entire indisposition.

The family physician testified to having written the prescription and also to his having professionally attended the plaintiff twenty-four hours later. He swore positively that he found her suffering from acute opium poisoning, and described to the court her symptoms, with considerable detail.

The plaintiff's counsel placed on the witness stand the manager of the defendant's store, who swore that he, himself, had dispensed the prescription in question, and the identical prescription was produced by him in court and identified. He swore further that he had made the substitution, and also that he had added morphine when none was prescribed.

Mr. Justice Gaynor having, himself, interrogated the druggist as to what, in *his* opinion, was a safe dose of the medicine to be administered, promptly dismissed the complaint.

The mere question as to whether the plaintiff or defendant should succeed in a litigation of this character is insignificant when compared to the great principle involved. Shall the druggist, in the dispensing of a physician's prescription, be permitted the liberty of substituting drugs other than those called for? This is the question which is interesting to us as physicians and any action emanating from the Supreme Court of this State, which has bearing on it, must, of necessity, receive the consideration at our hands to which it is justly entitled.

Owing to the fact that I wrote the prescription which enters largely into the subject of this litigation, and also owing to the fact that I professionally attended the plaintiff in her illness which resulted from the administration of the substituted preparation, I was subpoenaed as a witness to testify at the trial. I was, therefore, present during the entire court proceedings and observed all that occurred on that occasion.

I am also quite familiar with all the facts and circumstances which led up to the beginning of the action. As a full knowledge of these facts and circumstances is necessary to a complete understanding of the situation, I beg permission briefly to relate them, and as the matter has now become one of public record, I will not hesitate in my statement to mention the names of the persons concerned.

The plaintiff, Mrs. Emma Laturen, is a married woman, residing with her husband in the Borough of Brooklyn. She is the mother of three children, the oldest being a boy who is about seventeen years of age and who is a pupil at the Commercial High School.

I have regularly professionally attended the plaintiff's family since her marriage and I was her mother's family physician before that time. During all these years of my professional observance of her I have naturally become well acquainted with her peculiarities of constitution, together with her idiosyncratic tendencies, and very early in her married life I was made aware of the fact that morphine was, to her, a poisonous drug.

For some months prior to April, 1903, she suffered from metrorrhagia, consequent on the menopause. Her hemorrhages were profuse and prolonged to the extent that she became very weak and markedly anemic.

During the month of March, 1903, she suffered from a very severe uterine hemorrhage which confined her to her bed for a number of days. During her convalescence from this attack she was unfortunate enough to contract an acute bronchitis, which was accompanied by a cough so distressing and harassing in character as to materially interfere with her sleep, and further increase her general weakness and discomfort.

In this debilitated condition Mrs. Laturen dragged herself to me at my office on the sixteenth day of April, 1903, and requested me to give her something to relieve her cough. I observed that she was very pale, presenting an almost bloodless appearance, and also that she showed other evidences of marked debility. Remembering that morphine affected her badly I determined upon the administration of small doses of heroin combined with stimulating expectorants. I therefore wrote for her the following prescription, at the same time giving her proper verbal instructions as to its use.

℞ Elix. Pinus Comp. cum Heroin.....℥
(Merrill's)
S. One teaspoonful in water every four hours.
Cruikshank.

That same afternoon, namely, on April 16, 1903, her son took this prescription to the drug store owned by the Bolton Drug Co. situated at the junction of Sixth and St. Marks avenues, this borough, for the purpose of having it dispensed. The prescription was handed to Mr. Wilson, who is the manager of the store. After a reasonable length of time a bottle was handed to the boy who took it home and gave it to his mother, whereupon she immediately took a teaspoonful of its contents. About half an hour after taking it she became sleepy and drowsy, and suffered from nausea and vomiting. These symptoms persisted, the nausea and vomiting recurring whenever she attempted to raise her head from the pillow. After having slept for several hours she awoke and her cough being troublesome she took another dose of the medicine, having no suspicion at this

*Each fluid dram contains

White pine	2½ grains
Balm Gilead buds	2 "
Spikenard	2 "
Wild cherry bark	1¾ "
Ipecac	¼ "
Sanguinarine nitrate	1/64 "
Ammonium chloride	½ "
Chloroform	½ minim
Hydrochlorate of heroin	1/24 grain

time that it was responsible for her condition. Shortly after taking the second dose the drowsiness and the other symptoms, which have been described, became more pronounced. The patient says she "felt as if she were floating off into space," and was unable to raise her head from the pillow on account of the increased nausea and vomiting which such action produced. When aroused from her drowsy condition she would make attempts to get up out of bed but was unable to do so owing to the combined feelings of weakness, drowsiness, headache, dizziness, nausea and vomiting. To make matters worse, her vomiting had the effect of producing a recurrence of her uterine hemorrhage. About noon, the next day, namely, on April 17, she had sufficiently recovered from these symptoms to realize that her cough was still troubling her and suspecting that the medicine was "too strong" she reduced the dose, taking about one-half a teaspoonful. This dose was repeated several times and as the symptoms which have heretofore been described, reappeared, her son brought the bottle to my office with the request that I should see if it contained "the right medicine." A glance at the bottle was sufficient to convince me that there was a decided difference between its contents and the medicine which, under the prescription, it ought to contain.

I, therefore, communicated with the Bolton Drug Company by telephone, and had a conversation with Mr. Wilson, the manager of the store who informed me that he had himself dispensed the prescription. Mr. Wilson further informed me that when he received the prescription he did not have in stock the article which it called for, namely, the compound elixir of pine with heroin (Merrill's) and so he used as a substitute the compound elixir of pine to which he had added one-twelth of a grain of heroin to each teaspoonful.

I thereupon asked him if he were not aware that the prescription called for one-twenty-fourth of a grain of heroin to each dose instead of double that quantity. He replied that he was not aware of the fact and also that he possessed no actual knowledge as to how much heroin the prescription should contain. I then suggested to Mr. Wilson the advisability of immediately dispensing the prescription as it was written in order that the medicine might be sent to Mrs. Laturen, at the same time telling him where he could obtain the proper preparation. (Shortly after this conversation occurred, a neighboring druggist received an order from the Bolton Drug Company for four ounces of compound elixir of pine with heroin (Merrill's) which order was properly dispensed. That same evening a bottle was delivered at the residence of Mrs. Laturen from the Bolton Drug Company, the label on which bottle corresponded exactly with that which was attached to the bottle containing the substituted mixture, but the difference in the general appearance of the two preparations was very marked.)

During this conversation I asked him to read to me over the telephone, the formula of the preparation to which he had added the heroin. Mr. Wilson thereupon read to me the formula as requested and seemed surprised when he discovered that it showed one-sixteenth of a grain of morphine acetate to each fluid dram.

It will, therefore, be seen, according to Mr. Wilson's own statement, that Mrs. Laturen received twice as much heroin as was prescribed for her in addition to which heroin she received one-sixteenth of a grain of the morphine acetate with each dose.

When Mrs. Laturen's idiosyncrasy is considered it is not hard to account for her distressing symptoms.

As soon as possible, after I was informed of the substitution, namely, on the evening of April 17, I visited Mrs. Laturen. I found her in bed. She was very drowsy, answering my questions very slowly and frequently breaking off an answer in the middle of a sentence. Her pupils were contracted, her respirations were lowered, and she was suffering from nausea and vomiting, the nausea being most distressing when the patient was raised in bed. Her pulse was full and much slower than normal and altogether she presented a picture quite characteristic of acute opium poisoning Strychnine, ergot and atropine were given hypodermically and the administration of the medicine was discontinued.

The next day she was better but very weak. Her nausea lasted for two or three days and her general weakness confined her to her room and residence for several weeks. Owing to the debility consequent upon her metrorrhagia her convalescence was slow, and it was several months before she entirely recovered her normal health and strength.

Mrs. Laturen was very indignant concerning the treatment to which she had been subjected at the hands of the druggist and after consultation with her husband, she decided to bring a civil action for damages against the Bolton Drug Co. Through her attorney, Mr. Edmund F. Driggs, of the New York bar, an action was brought and was disposed of by Mr. Justice Gaynor in the manner already described.

It would be interesting to know exactly by what process of reasoning the learned court, in its judicial wisdom, decided to dismiss an action of this character. Perhaps the following abstract from the stenographer's minutes of the trial will tend to throw some light on this phase of the case:

By the Court: "The evidence in this case is, at the most, that the amount of morphine in this drug, as put up by the pharmacist, was light, one-tenth of a grain to a teaspoonful. There is no evidence here that an excessive dose of morphine was put up. I dismiss the complaint. That it had an unusual effect on this woman is not enough."

In view of the medical testimony, this is a remarkable opinion, and can be accounted for, it seems to me, only under the suggestion of misapprehension.

The language of the court, in its dismissal of the case, expressly calls attention to the fact that morphine was dispensed whereas the evidence shows that no morphine was prescribed. What then had become of the physician's prescription? The learned judge was constantly laboring under the impression that morphine and heroin are identical, whereas nothing can be further from the real fact, as a reference to any medical authority will show. The two drugs are as distinct as they can be, both in their chemical constituents, and in their therapeutic effects.

Even if the drugs were identical the learned court says distinctly that one-tenth of a grain was dispensed whereas the prescription calls for one twenty-fourth of a grain. Is it possible that the prescription is to be ignored and that human lives are to be placed in jeopardy in this reckless manner? Is it true that the courts will permit the patient to be deprived in this way of the physician's knowledge and skill and also that his services are to be superseded by the druggist who can have no knowledge of the general subject? Is there no contractual obligation in the premises? If not, the physician has arrived at a period of his professional career when he must, of necessity, dispense his own prescriptions in order to prevent the poisoning of his patients by the dispensing druggist.

"There is no evidence here," says Mr. Justice Gaynor in his opinion, "that an excessive dose of morphine was put up." Let us see for a moment what the evidence in the case really is on that point.

Abstracted from the testimony of Dr. Cruikshank.

. . . "I found the patient suffering from acute opium poisoning. Her pupils were contracted, her respirations were lowered, and she was drowsy. She suffered from nausea and vomiting particularly when her head was raised from the pillow. Her symptoms were characteristic of an overdose of opium."

If the courts have some mysterious way by which they are enabled to diagnose an "excessive dose of morphine" except by means of the sworn testimony of medical men who describe the symptoms and other clinical phenomena, I have never been made aware of it. I can speak only for the medical profession. In this case, however, the learned justice held that the testimony of the druggist who had actually made the substitution, was admissible and guiding to the court as to whether or not for this particular patient, a safe dose of the combined alkaloids of opium had been dispensed. Of course, the druggist could not in any possible way possess knowledge of her physical condition, nothing whatever concerning her susceptibility to the effects of drugs; no knowledge whatever about the age of the patient, whether a child or an adult; in fact, no therapeutic knowledge as the result of theoretical training or clinical experience, and a thoroughly interested witness in every sense. A witness who so far forgot his relation to the court as to misinform the learned justice by swearing that the prescription concerning which he is testifying, calls for a "patent medicine," when, as a matter of fact, the medicine prescribed is a strictly ethical preparation, the full formula of which is printed on each label. A preparation which is manufactured by a chemical house of over seventy-five years' standing —a house well known all over the United States and in Europe for the strict integrity of its pharmaceutical products. The witness might as well have told the court that Squibbs' compound tincture of opium is a patent medicine. There would have been as much truth in the one statement as in the other. When asked by counsel if the preparation in question is "known," his answer is, "No, not known to the trade in that section of the town," meaning the portion of the city in which the store in which he is employed is situated. Of what value is the testimony of a witness, as to an overdose of opium, who swears that the emetic dose of ipecac is one-quarter of a grain, that morphine will have the same effect upon the weakened and debilitated as upon the strong and robust, who informs the court that one-quarter of a grain of morphine given every hour "might upset a patient?"

At this point, absurdity having reached its height, I prefer to quote the testimony of the witness from the stenographic minutes of the trial:

Q. When you added the heroin, one-twenty-fourth of a grain to a teaspoonful and one-sixteenth of a grain morphine acetate, how much morphine does that make? A. About one-tenth of a grain to the dose.

Q. So that this prescription as you put it up and delivered to this plaintiff contained about one-tenth of a grain of morphine to each teaspoonful of fluid? A. Right.

Q. Is one-tenth of a grain of morphine to a teaspoonful of fluid, administered once every four hours, a safe dose? (Objected to as not coming from an expert.)

The Court: I will take if he knows. (To the witness) You are a licensed chemist, are you not? A. I am a licensed chemist.

By Mr. Nadal: Q. Is that a safe dose or not? A. Yes, sir, perfectly. (Same objection, ruling and exception.)

By the Court: Q. How high a dose would be injurious for an adult? A. One-quarter of a grain every hour might upset a patient.

Mr. Nadal: Q. One-quarter of a grain? A. Yes.

By the Court: Q. Might upset them? A. Put them under the influence of morphine. (Same exception.)

By the Court: Q. One-quarter of a grain every four hours would upset them? A. Every hour.

By Mr. Driggs: Q. You mean an adult person in health? A. An ordinary adult—every adult.

Q. How about a woman already weakened with hemorrhages; would it have a greater effect upon such a patient than upon a patient in health? A. What, a quarter of a grain?

Q. Yes. A. I don't think it would.

By Mr. Driggs: Q. Who do you mean considered this to be a safe amount—yourself?

Q. Did you know what was the matter with this lady at the time you took this prescription from her? A. No.

Q. Did you know that she was very susceptible to morphine? A. No.

Q. You gave her something which contained morphine? A. Heroin is morphine in form.

Q. Did you know that this Elixir Pinus Compositus Merrill's contains morphine, one-sixteenth of a grain? A. Yes, sir.

Q. And this is what you used, adding to it one-twenty-fourth of a grain of heroin? A. Yes.

Q. You take this heroin, one-twenty-fourth of a grain to the teaspoonful and then this morphine in the bottle you take it from, one-sixteenth of a grain to the teaspoonful, is that a large dose of morphine? A. No, sir. (Excepted to as not coming from an expert.)

Q. I understand you to know the properties of these drugs and their effects, do you? A. Yes, sir, I do.

Q. What kind of a dose would these two combined make? A. A perfectly safe dose.

By Mr. Driggs: Q. How do you know the effects of morphine on the human system? A. I take it from the National Dispensatory.

Q. You never had a medical education, had you? A. No.

Q. You are not a physician, are you? A. No.

The learned Court, in its opinion, further says: "That it had (meaning the medicine) an unusual effect on this woman is not enough."

Let us see if we can throw any light on what his honor is pleased to call an "unusual effect." That the medicine had the effect of making the plaintiff sick is conceded in this part of the opinion. Just here the following testimony of Mr. Wilson becomes still more interesting:

Q. When you received this prescription, what did you do? A. I called up our main store, No. 456 Fulton street, to ascertain if they had Elixir Pinus Comp. with Heroin (Merrill's); they said no; then I called the doctor up to find out what dose of heroin he intended to be added.

Q. Doctor who? A. Dr. Cruikshank; he was not there and I took the liberty to give what was considered a perfectly safe dose, which is one-twenty-fourth of a grain of heroin to a teaspoonful.

Q. One-twenty-fourth of a grain to a teaspoonful? A. Yes, sir.

By the Court: Q. That is a safe dose? A. Yes, sir.

Q. You are sure you put no more in? A. Yes, sir.

Q. How many grains did you put in the bottle? A. A grain and a half.

By Mr. Nadal: Q. And that you added, as I un-

derstand you, to the Elixir Pinus Comp., you already had? A. Yes, sir.

Who is to say, in the face of this evidence, what amount of opium or what preparation of that drug was finally administered to the plaintiff? In the preparation of prescriptions, in the manufacture of pharmaceutical products and also in the combining of chemicals for human consumption, much depends upon the manner in which the drugs are put together. Pharmaceutical chemistry is a special branch of science which deals with very important questions along this line. During the past quarter of a century this branch of the work has made advancing strides until it has reached almost perfection. The retail druggist is no longer called upon, with his crude and limited methods, to manufacture preparations which eventually become the ingredients of physicians' prescriptions, to the extent that was required of him in former years. In this work he has been succeeded by the large chemical houses which employ the services of the best pharmaceutical chemists they can obtain, regardless of expense, with the result that the consumer is enabled to obtain much more efficacious and palatable medicines than ever before in the history of pharmacy. This is particularly true of those preparations manufactured in the United States. The physician is thereby enabled to administer to his patient medicinal therapeutic agents which are manufactured by large and responsible pharmaceutical and chemical manufacturing establishments, the names of which establishments are sufficient guarantee of accuracy of preparation and chemical purity. It is fitting, therefore, that some attention should be given to the manner in which this prescription was prepared. Did the druggist dispense heroin proper in his substitution, or did he use the hydrochlorate of heroin? If the former were used an insoluble and consequently a more dangerous drug was added to a salt of morphine already in solution, neither of which drugs was intended for the patient's use, and neither of which was prescribed for her. If the latter, namely, the hydrochlorate of heroin (the drug which the patient should have received) was in a haphazard way added to the expectorant mixture, the tannin contained in the wild cherry bark and other vegetable substances which formed a part of that fluid, would in all reasonable certainty be chemically acted upon and a tannate of heroin, which is an unknown quantity in medicinal therapeutics, be formed.

Thus it will be seen that nothing short of a careful quantitative chemical analysis can, by any possibility, determine what preparation or what dose of opium reached the plaintiff in this case, once the substitution which has been testified to was made. The fact remains that the druggist dispensed, instead of a perfectly clear mixture, which should appear bright red in color, a thick, muddy looking fluid, which he, himself, swears contained heroin *itself* in addition to morphine acetate. Is it then unreasonable to conclude that the learned justice misunderstood the real situation when he stated that there was no evidence that an excessive dose was "put up"?

The courts should be intolerant of intrusion upon the physician's prescription by the druggist. The sick and helpless should not be surrounded with the spirit of commercialism which has become so prevalent and far-reaching in the dealing with matters appertaining to public welfare. Our very system of jurisprudence would seem to be on trial in the adjudication of matters of this character. To allow the physician's prescription to be tampered with and violated in the manner which the evidence proves to have been the fact in the case under consideration, is a retrogressive step in our civilization which is a serious menace to the community. Very truly yours,

William J. Cruikshank.

102 Fort Greene Pl., Brooklyn, N. Y.

SOCIETY PROCEEDINGS.

NEW YORK PATHOLOGICAL SOCIETY.

Stated Meeting, held February 10, 1904.

The President, Otto H. Schultze, M.D., in the Chair.

Hemorrhagic Meningoencephalitis.—Dr. M. G. Schlapp presented a specimen taken from a case of hemorrhagic meningoencephalitis in a child sixteen months old. The child had been well until December 25, when it developed a cough, an acute foul-smelling rhinitis lasting four or five days. At the end of this period convulsions appeared on the left side, involving the left leg, arm, and face, later on spreading to the right side. It had previously been noticed by the mother that the fontanelles had bulged very much. The child had edema, most marked about the eyes, nose and forehead. This lasted only for about an hour and then disappeared. The convulsions grew worse and the mother took the child to a hospital where the fontanelles were punctured, showing a collection of fluid, but no change of anything else was noted. As the child grew worse, clonic and tonic convulsions developed. The child practically remained in a tonic convulsion. Acute hydrocephalus was diagnosed. About one and one-half hours after puncturing the fontanelles, the child died.

The autopsy was performed by Dr. Schultze, who was allowed only to open the cerebral cavity. He took out the brain and found a hemorrhagic area extending from the frontal pole to the precuneus on both medial surfaces, and laterally the hemorrhage extended about one and one-half inches from the longitudinal fissure. This hemorrhage discolored the brain. In the longitudinal sinus was found a thrombus. It did not fill out the sinus completely. Most of the veins extending laterally from the longitudinal sinus were thrombosed. This condition on section looked exactly like cases described as non-purulent hemorrhagic encephalitis. The hemorrhage was confined to the cortex of the brain, giving the peculiar dotted appearance of the non-purulent hemorrhagic encephalitis. It could be mistaken for this type of encephalitis. The thrombus of the longitudinal sinus most likely caused the condition and was probably an infectious one. Besides hemorrhage and thrombosis there was a meningitis extending over the greater area of the brain. It was not confined to the hemorrhagic area, but extended to apparently normal areas. This meningitis was of the cellular type made up of round cell infiltration, mononuclear leucocytes, not pus cells. It was likely that the meningitis was caused by the same condition that caused the thrombus, or the thrombus was secondary to the meningitis. It was possible that this infection might have passed through the lymph spaces, Pacchionian bodies, into the longitudinal sinus, in that way producing thrombus. It might have been produced through the blood vessel in the same way the meningitis was produced. Round cell infiltration around the blood vessels and meninges was well shown.

Hemorrhagic Myelitis.—Dr. Schlapp also showed a specimen from a case of this affection in a man, forty-eight years old, who two years previous to this attack of myelitis had had an attack of malaria. His-

tory of syphilis, alcoholism, etc., negative. About two months before this trouble came on he had an orchitis from a trauma. The testicle was very much swollen. It was removed by a surgeon in California. The surgeon had told him that the nature of the lesion was tuberculous. The wound healed and he felt fairly well after the operation. He took a trip to the mountains where he strained himself walking and driving over rough roads, and after a particularly long drive he had chills and felt weak in the legs. Then numbness was felt in the soles of the feet and gluteal region. The numbness disappeared and the man came East. While here the numbness again came on and in two or three days it extended from the plantar surface of the feet up to the medial part of the thigh. The gluteal region was also involved. When seen by Dr. Schlapp the man had no definite objective symptoms, although at that time it was suspicious of beginning myelitis. There was no temperature and the pulse was regular—80 to 84. The man was put to bed and watched. The day after Dr. Schlapp had seen him, he developed a subnormal temperature—97° to 96.8° F. This kept up for several days. In the meantime the numbness grew worse and objective symptoms appeared; there was sensory disturbance, marked pain, and temperature, sense disturbed and ataxia; later complete anesthesia below the knees, spreading up the legs and body to the region of the navel; remained one or two days in this condition and then spread to the arms and the man died of a condition resembling paralysis of the vagus and respiratory and heart centers. One and one-half days before death he developed a temperature of 103° F; before that it had been subnormal. On autopsy, Dr. Elser found cirrhosis of the liver and pneumonia, which had existed several days before his death. He had had also acute parenchymatous nephritis. The bones of the spinal column were normal; no infectious condition from that source. No meningitis, no disturbance of the pelvic organs. The spinal cord from the second lumbar segment to the fourth cervical presented small hemorrhages throughout all the tissue; white and gray matter was affected alike. The area of hemorrhage varied in some places more than in others less marked, but distinctly involving the tissue of the cord. At that time the case was diagnosed (and subsequent histological examination verified this conclusion) as non-purulent hemorrhagic myelitis. No meningitis. These hemorrhagic conditions of the cord, Dr. Schapp said, were not very common and the question arose, What was their cause? Cultures were made but they were negative. A Gram stain made of a section was also negative. Nothing definite was found in the section. A drawing of a section of the cord was shown.

Dr. Noyes, in the discussion, said that the first case would be extremely interesting if a report of the cerebrospinal fluid or blood from the ventricle had been made. He understood that this had not been done. In a case reported to the Neurological Society, Dr. Brooks had spoken of the difficulties of diagnosis of hemorrhagic meningoencephalitis, and careful examination of the cerebrospinal fluid sometimes facilitated this diagnosis. Much careful work had been done in the city on the cytology of the cerebrospinal fluid during the last few months. Recent articles in some French journals report that in almost all hemorrhagic conditions, such as hemorrhage into the ventricle, and hemorrhagic encephalitis, the cerebrospinal fluid showed a reddish discoloration of the serum or red corpuscles; and this phenomenon frequently makes a positive differential diagnosis possible. Dr. Schlapp had spoken of infiltration of mononuclear leucocytes of the tissues. It was interesting to compare the presence of lymphocytes in the cerebrospinal fluid and blood with the presence of the same type of cells in the tissues, lymphocytes in the fluids being chiefly found in certain classes of cases, as syphilis or tuberculosis, while polynuclear cells indicate acute infections. Whether this coincided with what could be demonstrated with sections, or how far it occurred with types of leucocytosis in general, Dr. Noyes did not know. The diagnosis of meningoencephalitis though rather difficult could be made by excluding the more common general and local lesions of the brain. It was sometimes found at autopsy where other diagnoses had been made.

In regard to Dr. Schlapp's second case, Dr. Noyes said it was extremely interesting because so many of those transient cord conditions are met with in cases where paralyses have come and disappeared, and one can only infer that some vascular lesions have occurred. Possibly the vessels may have been obliterated but the changes may not have gone so far as the cases Dr. Schlapp had shown. Probably lesions of this type occur more frequently than is supposed.

Dr. Schultze said the cases were also interesting from a medicolegal standpoint. As far as his own experience went he thought the occurrence of a true hemorrhagic type of inflammation rare. The cases which Dr. Schlapp had described might readily be mistaken for cases of trauma unless that condition were kept in mind. It was possible for an inflammation of the pia and the brain or cord, or for a thrombosis of the longitudinal sinus, to produce a condition which might be mistaken for laceration of tissue with subsequent hemorrhage.

Dr. Schlapp said that he considered the remarks made by Dr. Noyes as important, as to lumbar puncture in the second case. In the first case he thought diagnosis would have been made before if the physician had taken the mother's report. She said the child developed convulsions on one side, then on both. The child had edema of the tissues of the frontal bone over the eyes and eyelids. This, he thought, would have led the physician to think of thrombus of the longitudinal sinus at once. If the eyes had been examined a protrusion of the central vessels of the eyes would have been observed.

Teratoma of the Broad Ligament.—Dr. Ferdinand M. Jeffries said, in presenting a teratoma of the broad ligament, that he thought the specimen of more than usual interest. He thought it unique in character. It was taken from a girl of seventeen—a virgin. The history dated merely two days previous to the operation, although since the operation, when the growth was removed, the surgeon had gleaned the fact that the girl had been troubled for some time with constipation and that she was very easily fatigued, and on some occasions suffered considerable pain which was supposed to be in some way connected with the constipation. Two days previous to the operation the girl consulted her family physician, but it was merely for constipation. He gave her some laxative. Next day he called, and found the patient in distress with no action of the bowels, and upon examination found an enlargement of the left inguinal region, which he had not seen at the first examination. He did some manipulation and increased the laxative dose. The next day he was called in great haste and told that quite an enlargement was noticeable in the left inguinal region. Then he called in a surgeon. There had been, up to that time,

no action of the bowels. The surgeon was at a loss to know what it was, but there had been a state of collapse and temperature previous to his arrival. The surgeon advised operation, and he went in through the cul-de-sac. As soon as he made an incision he found a hematoma. He got rid of the clot of blood and in his search found what appeared to be membrane, and made up his mind that there was pus. He made an incision through the membrane, but instead of pus coming, there was a serosanguineous fluid containing a lot of fat, partially saponified or emulsified. He traced this along and came to the growth shown by the speaker. Although found in the left inguinal region, it was attached to the right broad ligament. The surgeon took the entire growth out through the cul-de-sac of Douglas. It was a cyst about the size of a child's head. It was a body covered with skin, having peculiar toe-like enlargements, some large, others small. There was floating with the fat a quantity of hair. The cyst contained bone and cartilage; the one described as toe-like is a picture of the tarsus bone. Some of these bones were harder and less cartilaginous than others. No histological examination had been made.

Dr. Jeffries also showed a cast of the bronchial tubes, a regular tree from a case of plastic bronchitis, more often seen in pictures than in reality. He also showed a sample of urine of unusual interest. It had been put under the microscope. It was urine filled with amebæ. At first it was thought that they might be due to water used to wash the bottle in which the urine was placed, or perhaps the centrifuge or pipette. This urine, in every field the speaker had seen with the one-sixth objective, contained seven or eight amebæ, some exceedingly large, one or two half filling the diameter of the one-sixth objective. The patient was a young man, about thirty-five years of age, who had measles. He had a stricture and his urine contained pus, and apparently had done so for a considerable period of time previous to the present attack of measles. The sample was presented for enlightenment. It was conceivable that there might, in some cases of dysentery, be new channels opened up from the bladder and *Amœba coli* might enter, but he thought these were *Proteus amœbæ*—perhaps there was no difference except in the locality where found. These amebæ did not seem to contain blood cells. He was not prepared to state what bodies were contained. Dr. Jeffries had that day been able to find amebæ in a case of amebic dysentery where he could show blood corpuscles. These did not look like chlorophyl-bearing bodies.

The Bacteriology of the Blood in Typhoid Fever; a Report on Sixty Cases, and a Statistical Study.—This was the subject of Drs. Warren Coleman and B. H. Buxton. The authors made bacteriological examinations of the blood in 60 cases of typhoid fever in Bellevue Hospital, and have collected 544 similar cases from the literature, giving a total of 604 cases. Their practice was to distribute 10 c.c. of blood taken from one of the large veins at the elbow, into four flasks each containing 100 c.c. of broth and to incubate at 37° C. When the cultures were positive they tested the bacilli in glucose gelatine, litmus milk, neutral red agar, and other differentiating media. They were also tested for their agglutinating properties in an active serum. A reaction at 1:100 was considered sufficient for diagnostic purposes. Believing that paratyphoid infections should be considered clinically as cases of typhoid fever they have included in their totals the 23 cases of so-called paratyphoid fever in which bacilli have been found in the blood. Seventy-five per cent. of the 604 cases showed the presence of bacilli in the blood at some stage of the disease, and the authors felt inclined to regard even this as somewhat lower than may be expected in future investigations, since the most recent records, those of Busquet, Courmont and Tesien, show that with the most improved methods the bacilli are practically uniformly present in the first three weeks of the disease. Analyzed by the week in which the examination was made it was found that: (1) Of 85 cases in the *first week* positive results were obtained in 79, or 93 per cent.; (2) of 198 cases in the *second week*, positive results were obtained in 151, or 76 per cent.; (3) of 115 cases in the *third week*, positive results were obtained in 65, or 56 per cent.; (4) of 55 cases in the *fourth week*, positive results were obtained in 18, or 32.7 per cent.

The striking fact brought out by this analysis was the large percentage of positive results obtained in the first week of typhoid fever with the steady decline thereafter. From this it appears that the earliest and principal seat of infection in typhoid fever is the blood. The authors believe that the bacillus disappears from the blood about the end of the third week in the ordinary case of typhoid fever, and that its failure to disappear at this time means the prolongation of the clinical course of the disease.

Twenty-one cases were examined during a relapse, and the bacillus was found in all but three of them. Ten per cent. of the 604 cases presented the bacillus in the blood before the Widal reaction could be obtained. The Widal reaction is often delayed to the twentieth or the thirtieth day; but in one of their cases did not appear until the seventy-first day; hence it was felt that the absence of this reaction by no means justifies the diagnosis of paratyphoid infection. Two of the authors' cases gave the *Bacillus coli communis* in pure culture in the blood. Both cases were mild and the question was raised whether the colon bacillus might cause a primary systemic infection.

Dr. W. Gilman Thompson said an absolutely accurate test would be of great value in an early diagnosis of typhoid fever, and also in those cases in which one may be in doubt later in the disease as between the existence of typhoid fever and some of the conditions for which it is occasionally mistaken, like an obscure case of malignant endocarditis. In regard to the bacteriological examination being of use in very early diagnosis, he asked Dr. Coleman how soon he could guarantee a positive result, if such existed, after obtaining a specimen of the blood.

Dr. Coleman replied in about three days.

Dr. Thompson said that that reduced the value of the result for early diagnosis. If the specimen were obtained on the fourth day, and three or four more days elapsed before results were obtained, the test did not improve on the Widal reaction, which was often apparent by the end of the first week, or upon the appearance of eruption, etc. In that respect he thought the test a disappointment, as an early one to be used as a help in the matter of diagnosis at the bedside. Dr. Thompson had, however, had a number of cases examined at the Presbyterian Hospital, positively demonstrating the presence of bacilli before the Widal reaction was obtained. The Widal reaction had been behaving in a peculiar way. When the test was first used in the city, the speaker was interested in collecting data. He gathered data from other clinicians to the number of five hundred cases. In 93 per cent. of these cases the Widal reaction was found during the active course of the disease, a large percentage being at the end of the first week. With recent tests the reaction was absent in many cases typical, clinically, of typhoid fever, which tests are not returned as positive either from the Health Board or specially trained observers

in the laboratory even after three or four weeks, or perhaps when the patients are in convalescence or relapse. The technic of the Widal test had improved and examiners were reluctant to report a positive reaction until it was obtainable with a much greater degree of dilution than that at first employed. Dr. Thompson believed that bacteriological reaction of the blood could yet be made more satisfactory, and used as an earlier test than the Widal reaction.

The reference of Dr. Coleman to the new aspect in which typhoid fever is regarded—that is, as a blood toxemia—was very interesting, for it afforded an explanation of certain phenomena of the disease, particularly such complications as involved the gall-bladder, periostitis of the rib, phlebitis, etc.

In regard to the paratyphoid germ, demonstration of its presence in the blood was not as yet of any real clinical value in distinguishing the varieties of typhoid fever at the bedside. Paratyphoid had been reported to him by bacteriologists, when he had been entirely unconscious from the clinical standpoint that he was dealing with anything but ordinary typhoid fever. The bacilli of the ordinary typhoid had been found in mild and severe cases, and so it seemed in regard to paratyphoid bacilli. Five cases of apparent typhoid infection had been brought to the Presbyterian Hospital from a tenement house. They were thoroughly investigated by the Health Board from an etiological standpoint; and one which came to autopsy appeared to be typhoid fever, but paratyphoid was reported in two or three of the cases. These cases did not present any clinical peculiarities. This recalls the difficulty in differentiating degrees of malignancy in types of diphtheria and tuberculosis germs. The typhoid bacteriology is interesting in connection with the study of the natural history, in general, of these germs. Dr. Coleman had emphasized the futility of the use of intestinal antiseptics in typhoid fever. The speaker thought the discovery of these bacteriological tests ought to put a final quietus on the attempts to treat typhoid fever with intestinal antiseptics alone. No better proof of this was needed than that brought out by such research as that under discussion.

Dr. Norris asked how many cases of typhoid fever Dr. Coleman had found in which he could not obtain the Widal reaction, and in how many cases he found concurrent infection with typhoid. It was rather hard to draw conclusions from broth cultures because in that medium at no time could the original number of bacilli found in the blood be estimated. It was a favorable medium for the isolation of typhoid bacilli, however.

Dr. Field said that he objected to their considering a disease as a septicemia because microorganisms were found in the blood. Dr. Libman had shown that numerous surgical cases suffering from localized *Staphylococcus aurcus* infections showed many staphylococci in the blood. He thought that they were absorbed from the point of infection and that they did not increase or multiply in the blood stream. In typhoid fever, he said, there were a great number of typhoid bacilli in the intestine, and it was perfectly conceivable that these organisms could find their way into the blood stream by way of the lacteals, especially when there was food undergoing digestion. Where the number of typhoid bacilli per c.c. had been determined they had always been found to be few. In those cases of typhoid fever which have been called typhoid septicemia, the bacilli were present in large numbers per c.c. and the clinical picture was entirely different. The speaker did not think it proper, therefore, to term the disease, as ordinarily seen, a septicemia because a few bacteria were found constantly or in a large proportion of the cases in the blood stream. He did not think that it was in the blood stream that they proliferated and caused that profound toxemia seen in this condition.

Dr. Libman said that he agreed with Dr. Field that typhoid fever should not be considered as a general disease simply because some bacilli were found in the blood. It was different with cases in which there were no local lesions. To illustrate the point that bacteria might be in the blood, even in large numbers, without setting up any secondary foci or seeming to make much trouble, he referred to a case of osteomyelitis of the humerus which he had recently seen. The pus from the bone contained the *Staphylococcus aureus* in pure culture and by means of a blood culture it was demonstrated that there were five hundred colonies of the *Staphylococcus aureus* to each c.c. of blood. After the focus in the bone was opened up the temperature dropped considerably and four days after the operation the blood was found sterile and the patient recovered.

He also thought that it was hardly conceivable that the symptoms of typhoid fever, as a rule, were due to the presence of the bacteria in the blood because so few of them were usually found. He believed that it might be possible to obtain results earlier if inoculations were made from the flasks containing the blood even before any turbidity developed from the growth of bacteria. With the Widal reaction his results had differed from those of Dr. Thompson. The results had been better than those in previous years. During September, October and November, every case of typhoid had given a positive Widal reaction within three or four days after admission.

He believed that the finding of the typhoid bacillus was of importance in establishing the etiology of otherwise obscure conditions. There had been admitted into the service of Dr. Rudisch, at the Mt. Sinai Hospital, a patient suffering for twenty-four hours from symptoms apparently due to intestinal perforation. On operation a localized pus sac was found, a culture from which showed *Staphylococcus aureus* only. There were no typhoid bacilli in the urine or stools, but the blood, two days after admission, was proven by culture to contain typhoid bacilli. The Widal reaction became positive about a week later. In that case the diagnosis would not have been definitely established so early without the blood culture.

Dr. Coleman said that only one or two of the authors consulted made mention of mixed infections in typhoid fever. In a few cases Busquet had found other organisms than the typhoid bacillus; *e.g.*, streptococci, staphylococci and pneumococci.

Dr. Buxton said he had found no evidence of mixed infections in the cultures.

Dr. Coleman agreed with Dr. Field that typhoid septicemia was not a good term, and said that they had used it only to emphasize the fact that typhoid fever was not an intestinal disease, susceptible of modification by means of intestinal antiseptics.

Demonstration of Coagulum Production by Growth of Bacteria in Sugar Media.—Dr. E. Libman said that in a paper published several years ago on the features of the growth of bacteria in media containing both sugars and serum, he had mentioned that he had occasionally seen coagulum production in such media, and had suggested that the phenomenon might become of some importance in explaining the occurrence of some cases of thrombosis in infections, especially in diabetes. Since that time Dr. Flexner had brought up the question of the agglutination of red blood cells as a cause of thrombosis. The flask which Dr. Libman presented contained streptococci growing in a medium containing one-half per cent. glucose bouillon, two parts,

and serum, one part. In it could be seen very nicely the very extensive coagulation, and at the bottom of the flask marked agglutination of the erythrocytes. Central flasks containing no cocci showed no changes after several days.

Some Peculiar Changes in the Fluid of a Pleural Effusion.—Dr. E. Libman said that this fluid when first obtained, by aspiration of a chest in a case of pneumonia, was light yellowish in color and very slightly turbid. Microscopically it contained very few pus cells and some pneumococci. On standing in the thermostat twenty-four hours a precipitate began to form in the tube and the fluid turned greenish in color. After forty-eight hours the fluid was decidedly green, no longer transparent, and there was a heavy, clumpy deposit at the bottom of the tube. Without a microscopic examination one would have believed that the fluid came from a case of empyema. The specimen was shown merely to indicate that certain appearances which are seen in some exudates can develop as a result of bacterial growth outside of the body. It had been observed that certain streptococci could produce a greenish color in media which contained a decided amount of blood and occasionally fluid obtained from the cerebrospinal canal was seen to turn slightly green after standing a few days, but the marked change which the speaker had described, from a practically clear fluid to a fluid resembling closely an empyema fluid, had not, he thought, been noted.

CHICAGO MEDICAL AND ORTHOPEDIC SOCIETIES.

Joint Meeting, held March 30, 1904.

The President of the Chicago Orthopedic Society, Arthur B. Hosmer, M.D., in the Chair.

Multiple Lipomata.—Dr. Weller Van Hook exhibited a man, sixty years of age, with multiple lipomata of the neck. The patient first noticed these tumors nine years ago. At first, they annoyed him on account of the pressure which they made upon his collar button. The tumors at that time were about the size of a pea, but within a year or so they had attained their present size. The patient had not found it necessary, however, to wear a collar of larger size on account of the tumors. At the time of the incision, there was no attempt made to remove the entire tumors, but only portions of them were taken away. This operation was done by another surgeon. The tumors had been practically stationary in size for five years. Dr. Van Hook stated that symmetrical lipomata of the neck region were not very rare, but that this was a pronounced case. Patient had large lipomata in front of the neck which he said was not an unusual concomitant of such cases.

Gunshot Wound of the Olecranon Process.—The next case presented by Dr. Van Hook was one of considerable interest, the patient having sustained a gunshot wound in the month of November, the bullet lodging under the olecranon process. On this account the patient was unable to fully extend the elbow. The X-ray plates were probably the most interesting feature of the exhibit. He made an incision about three inches long, and extracted the bullet without much difficulty. The patient had a marked degree of anchylosis or incomplete motion before the operation, but after the bullet was removed motion improved materially. There was still some incompleteness of motion, but it was gradually improving. The patient was able to swing a sledge hammer.

Double Congenital Dislocation of the Heads of the Radii.—Dr. Van Hook showed a little girl with double congenital dislocation of the heads of the radii upon whom he had operated, saying that such cases were quite uncommon, but not very rare. One of Hoffa's assistants collected 31 cases from the literature. Of 12 cases that came under the observation of Hoffa, 8 were backward dislocations, and 4 forward. In the speaker's case the dislocations were both forward. The arms were in complete extension; no flexion could be effected; but after resection of the heads of the radii, it was possible to get some flexion. There was elongation of the radii which was common in such cases, and this fact prevented flexion at the elbows. The joints were imperfectly developed. The synovial cavities were not sufficiently extensive, and it had been the effort of months of treatment which he had given the case to extend the range of motion in the joints by occasional manipulation under nitrous oxide gas anesthesia. He believed the joint capsules were doing better work now than they did. There was certainly more motion than there was soon after the operations were undertaken. The little patient was now able to put her hand up to her face, which she could not do before treatment was instituted. The operation for the relief of this deformity was performed by Dieffenbach in the earlier part of the last century, when a resection of the entire elbow-joint was done, with fairly good result, and afterward more rapidly resecting the heads of the radii. He said that the heads of the radii had been resected by Hoffa, with good results. Resection of the heads of the radii was indicated in those cases where there was well-marked elongation of the radii, the radius being shortened sufficiently to come into fairly good articulation with the other structures. The etiology of this deformity had elicited considerable discussion. Some had regarded it as due to intrauterine improper position, while others had considered it to be due to unequal and improper growth of the bones composing the elbow joint, and elongation of the radius being supposed to be the etiological factor in such dislocations. The muscles had never sufficiently developed about the elbow joint either above or below; but considerable development had taken place in his case since the treatment was begun last June. In looking up the literature, he stated that Abbott reported before the Pathological Society of London seven cases that had occurred in four generations of one family.

Dr. John Ridlon asked Dr. Van Hook why the arms did not fully straighten. He said that his explanation of not being able to flex them was perfectly clear, but that he did not mention the reason for their inability to fully straighten.

Dr. Van Hook replied that he had kept the little girl's elbows on one occasion for quite a little while in as great flexion as possible, and he thought some contracture was responsible for the inability to extend the arms as completely as at the beginning, but it was his desire to give more flexion in order that the child might reach her face and head rather than to maintain free extension. However, he was in hopes that he would be able to regain the lost extension. In reply to a question asked by the President, Dr. Van Hook answered that the ligamentous structures were imperfectly developed. The ligaments were very thin, and much spread out. It was easy to cut down upon the head of the bone and excise the semi-cartilaginous mass.

Compound Comminuted Fracture Associated with Dislocation of the Ankle-joint.—Dr. L. L. McArthur showed a patient upon whom he had operated for this fracture, which was associated with a dislocation of the ankle-joint. He mentioned how the fracture was produced, and said on admission to the hospital it was found possible to evert the patient's foot on the leg as a hinge, so that the upper surface of the astragalus

and articular surface, or what remained of the tibia, could be completely exposed. Black mud was ground into the deeper portions of the joint. The vessels of the foot were intact. After some hesitation, but reenforced by the statement of the patient that she would rather die than have an amputation, he decided to try and preserve the foot. Under anesthesia it was possible to open the joint as if one was about to make a resection of it, exposing the entire articular surface by simply turning the foot outward on the leg. The fibula was comminuted; the tibia was fractured, and the internal malleolus loosened from the tibia. The broken end of the tibia had the dirt ground into the pores of the bone. The end of the tibia was chiseled off and freshened; the black dirt washed out of the joint as thoroughly as possible, and 95 per cent. carbolic acid swabbed over the entire joint surface for thirty seconds, and following that the use of alcohol until all the whitening effect of the carbolic acid had disappeared. The tibial fragments were wired together; the lower fragment, fortunately being adherent to the internal lateral ligament, by simply wiring it to the shaft of the tibia allowed sufficient fixation of the foot to permit doing without a cast. On the three following days the patient was given three successive doses of the antitetanic serum to guard against the possibility of tetanus developing. It was the author's practice to do this in such cases, and he had done so for seven or eight years. At the end of four weeks the patient left the hospital. The result was excellent. He emphasized the desirability of trying, with the consent and understanding of the patient, to save all limbs in which circulation was good, with the opportunity for a prompt amputation, should it become necessary, afterward. It was absurd to hope much from the antitetanic serum after the toxins had become colligated with the nervous tissue of the spinal cord.

Compound Comminuted Intercondyle Fracture.—The second case Dr. McArthur called attention to was one of compound, comminuted fracture involving the knee-joint, the character of the fracture being oblique intercondylar, with one fragment sticking through the skin. The patient was a sign painter, who fell from a scaffolding, striking with great violence, fracturing his knee, and driving a fragment through the integument. Macroscopic dirt was to be seen on the fragments. The wound was enlarged, and the fragments wired together, a useful joint being obtained. A skiagraph showed the fragments nicely united and the wire *in situ*.

Dr. Hosmer asked whether Dr. McArthur had seen any toxic effects from the use of 95 per cent. carbolic acid in joint injuries, that is, applying it for thirty or forty seconds where there was extensive injury of bone.

Dr. McArthur replied that he had never seen any toxic effects from it. He thought, however, that this was a particularly appropriate case in which to use it.

SYMPOSIUM ON TUBERCULOUS SPONDYLITIS.

Etiology.—Dr. Edwin W. Ryerson discussed this phase of the subject, saying that tuberculous spondylitis was applied to a destructive tuberculous process attacking the vertebræ. It occurred in the anterior portion, or body, of the vertebra, the part which did the supporting and weight-bearing of the upper half of the individual. It practically never affected the rest of the vertebræ, the pedicles, and laminæ, and processes, but the intervertebral discs were often destroyed by the direct extension of the disease. The disease was caused by the local deposit of tubercle bacilli which had been disseminated into the blood current, either from an older focus somewhere else in the patient's body, or from some direct infection of the circulation through the skin or mucous membranes. This latter method was rare, but was supposed by König to have occurred in several cases of joint tuberculosis, where at autopsy no antecedent focus could be found. The usual infection route, however, was undoubtedly through the lymphatic glands, bronchial, mesenteric or cervical, from which the bacilli found their way into the circulation individually or in small embolic masses, and traveled through the blood vessels until arrested by some obscure, determining cause, perhaps a minute hemorrhage due to slight traumatism, or possibly a little defect in the loosely constructed vessel walls, which allowed a mural implantation. The disease was most prevalent among the ill-nourished children of the poor, living in localities where they were exposed to tuberculous infection, in overcrowded and unsanitary dwellings. A large proportion of such children were shown at autopsy to have glandular tuberculosis, even though no clinical manifestations may have existed. Moreover, a clear hereditary predisposition had been demonstrated in from 25 to 70 per cent. of the cases of Pott's disease, the statistics of the different authors varying within those limits. Both sexes were about equally represented, boys being slightly more numerous than girls. Age was a powerful factor, for 85 per cent. of all cases began in the first decade of life, and fifty per cent. between the third and fifth years. No age was exempt, since cases were on record as young as two months, and as old as seventy-seven years. The disease was very common, and formed nearly half of all the various tubercular joint lesions. The portion of the spine most frequently affected was stated by Taylor to be the cervical region, but most other observers considered the junction of the dorsal and lumbar regions to be the most vulnerable. When in the cervical or lumbar vertebræ, the deformity was apt to be smaller and more successfully treated than when in the middorsal region.

Diagnosis and Prognosis.—Dr. John L. Porter said that in no form of tuberculosis did an early diagnosis mean more to the patient than in tuberculosis of the spine. Until the diagnosis was made, efficient, intelligent treatment could not be instituted. With an early diagnosis, not only was the treatment made more effective, and the prognosis improved, but the patient might often be saved a distressing deformity which added to an already crippled existence a burden of mental suffering and pain. He believed that a diagnosis of spondylitis could and should be made in every case before any deformity had appeared; regardless of the age of the patient, in almost every case sufficient additional evidence might be elicited to enable one to decide with reasonable certainty whether it was tuberculosis or not. Stiffness and rigidity of the spinal muscles, limiting the normal freedom of motion, and producing involuntary spasm of the muscles when motion was attempted, were the earliest, the most constant, and the most reliable signs of joint trouble anywhere. He considered the signs and symptoms of spondylitis in detail, with relation to the different divisions of the spine. He believed more failures to diagnose spondylitis were due to lack of careful examination than to lack of knowledge; but he did know that diagnoses of colic, rheumatism, sciatica, or injury covered a multitude of errors. When practitioners remembered that spondylitis might cause any kind of pain, from headache, earache, to sciatica, and when they cultivated the habit of examining the spine for rigidity as carefully as they examined suspicious lungs for tubercle bacilli, the early diagnosis of tuberculous spondylitis would be more frequently made.

In the prognosis of tuberculous spondylitis, one had to consider (1) the factors concerned in the prognosis were the time at which the diagnosis is made and the

treatment begun; (2) individual resistance to the disease; (3) the patient's age; (4) the patient's environment. These, with the location of the disease in the spine, were the chief points in determining the prognosis. Each point was elaborated by the speaker.

Straightening of the Curvatures of Tuberculous Spondylitis.—Dr. John Ridlon, after mentioning the methods of straightening of curvatures in cases of tuberculous spondylitis, related his personal opinions and conclusions, to which he had arrived from his experience, which were: So long as the carious disease was active, and before structural shortening in the muscles and distortion in the ribs had taken place, and before any solidification had occurred at the point of disease, straightening of the spinal deformity was possible by gentle means, *i.e.*, without anesthetizing the patient. When the deformity was still increasing, even if some solidification had taken place, straightening could be made by force in certain regions, namely, where distorted ribs and structurally shortened muscles did not hinder, and in all regions some gain could be had by the use of reasonable force. But when solidification had become complete, or so complete that there had been no increase of deformity for some months, the use of unreasonable force to make the spine straight was to be deprecated. In the cervical region he had always feared to use force to effect straightening. On the other hand, he had never failed to straighten cervical deformity by gentle means, namely, traction during recumbency, in all cases presenting evidence of active disease. In the upper dorsal region it was very difficult to apply force advantageously, and equally difficult to maintain any correction that might be made; and he was of the opinion that gentle traction and prolonged recumbency with leverage would accomplish as much as force. Only occasionally did one effect a straightening in this region; generally one must be satisfied to prevent a development or an increase of the deformity. In the lower dorsal and dorso-lumbar regions, the most frequent site of spinal caries, forcible straightening was most readily effected, and gave the best results. In the lower lumbar and lumbo-sacral regions, it was difficult to maintain any correction accomplished by forcible methods, and it was perhaps as well to treat these cases by traction and leverage. In selecting cases for forcible straightening, one should reject cervical cases as dangerous, upper dorsal cases as too difficult to straighten, and lower lumbar cases as too difficult to hold. Cases where the deformity had not increased for six months or more should be rejected as cases in which the disease had healed; and cases of short duration and no great deformity should be rejected as exposing the patient to unnecessary risk, for these cases could be straightened equally well by gentle methods. Patients that had been subjected to forcible straightening must be kept in absolute recumbency for from eight months to one year at least, and the region straightened must be as carefully immobilized as if fractured. Relapse of deformity to some extent usually occurred, but it was due to ineffective immobilization, careless nursing, or too short a period of recumbency. By gentle methods real straightening was not to be expected in patients who were allowed to sit up and walk around, though sometimes a false straightening could be accomplished; that is to say, the patient as a whole could be made to look straighter, though the actual kyphosis remained the same. The anteroposterior leverage spine brace was effective as a straightening device only in the hands of one familiar with its mechanical possibilities; it was not to be recommended to the general practitioner of medicine or surgery. Combined traction and leverage, though the most effective gentle means, was useless unless the patient was tractable and the nurse efficient. It should never be tried on an unruly patient, or where the nursing was inefficient. For most patients, cared for by the average nurse, and treated by any doctor other than an expert, a plaster jacket put on with the patient on Goldthwaite's frame, or some modification thereof, with the jacket sufficiently long both at the top and bottom would be found the most trustworthy device for immobilization, and when combined with recumbency for a long period, the most satisfactory method of treatment.

The Present Status of the Mechanical Treatment of Spondylitis.—Dr. Wallace Blanchard said that in considering the mechanical treatment of spondylitis it must be thoroughly understood that to get good ultimate results treatment should be begun at the earliest possible moment, and must be persisted in unremittingly until a cure is effected. It is not surprising to meet with a diversity of opinions regarding the utility of the various forms of apparatus, for several surgeons may be equally successful in their ultimate results, each utilizing the appliances with which he is the most skilled. The form of apparatus or method of treatment is of minor importance as compared to a correct understanding of the principles involved, and a firm determination when a case was once undertaken to unremittingly persevere as long as treatment might be necessary. Treatment by recumbency was frequently advisable in the early acute stages, and was occasionally necessary in cases that had become considerably advanced without any adequate treatment and with considerable deformity, with general physical weakness, and more or less advanced Pott's paraplegia. When recumbent treatment was employed it should be faithfully carried out with the view of having the patient on his feet with his spine safely protected in a jacket or brace at an early period. Frequently when the deformity was advancing, the most approved treatment was a combination of plaster jacket or brace with recumbency on any convenient lounging place, and preferably in the open air. The plaster jacket was very largely used and its efficiency had been greatly increased, if not doubled, by the use of the Goldthwaite stretcher frame. The author demonstrated how to apply the plaster jacket by the aid of this frame, and stated that prolonged experience had thoroughly demonstrated that when made and applied with proper skill and care, the plaster jacket and many of the forms of braces were very efficient for the treatment and cure of spondylitis, and that in a great majority of the carefully treated cases the deforming hump could be minimized and largely neutralized, and in a few favorable cases nearly, or quite, obliterated. A set of principles based upon the most approved mechanical means of treatment might be formulated, though the extent to which they could be carried out varied in each individual case: (1) To remove the superincumbent weight of the body; (2) To prevent flexion and rotation of the spine; (3) To put the greatest possible amount of pressure upon, or in the immediate vicinity of, the deformity compatible with the integrity of the skin; (4) To very thoroughly hyperextend the spine. It was believed that the application of these principles placed the spine in the best possible circumstances for healing, with the least possible amount of deformity. The author exhibited a plaster jacket with chin rest; a Taylor back brace with head supports; a brace for cervical spondylitis partially applied, with the chin nearly touching the chest, which was the typical position in advanced cervical spondylitis, and a brace for the treatment of cervical spondylitis.

Gravitation Abscess.—Dr. Alex. C. Wiener discussed this phase of the subject, and presented a patient upon whom he had operated for gravitation abscess. Gravitation abscess was both frequent and difficult to treat. There was a temptation to open these abscesses at the most prominent part and empty the pus, but this did not reach the seat of the difficulty. It only encumbered the patient with permanently oozing fistulæ, which were usually accompanied by mixed infection and amyloid degeneration, followed by the death of the patient. Such abscesses were rarely accompanied by fever, 101° F. being the highest recorded. The ordinary symptoms of sepsis were not present, and under favorable circumstances absorption might take place. He had observed in the right iliac fossa in a man, forty-five years of age, a tuberculous abscess the size of a child's head, which disappeared without leaving a trace. In this case there was a destruction of the first lumbar vertebra, and the only treatment employed was a permanent extension apparatus. Recently he had used, in a large psoas abscess, reaching down to the middle of the left femur, which originated in a tuberculous spondylitis of the first and second lumbar vertebræ, a large trocar to empty the pus. The man, thirty-four years of age, was attacked seventeen years ago with tuberculous spondylitis, which left quite a kyphosis of the lumbar spine. For seventeen years he did not experience any inconvenience, when, without apparent cause, the tuberculous process revived, resulting in a large psoas abscess which bulged forward at Scarpa's triangle. Just behind and below the left great trochanter was found a small swelling the size of a silver dollar. This spot was chosen for three preliminary injections of carbolic acid, six drops each time, five and seven days apart. Carbolic acid seemed to have powerful chemotactic qualities, since it allured, so to speak, the pus to the outer side of the femur. One pint of thick pus intermixed with chunks of fibrinous coagula and fine osseous débris was emptied the first time. Then fifteen drops of 95 per cent. solution of carbolic acid was slowly injected into the abscess cavity. The operation was repeated six times at intervals of one to three weeks. The last injection was made three months after the first one, when the fluid had changed into a clear yellow serum. At no time was there any harm experienced, either local or systemic, and the injections seemed to cause no pain or inconvenience.

Surgical Treatment of Tuberculous Spondylitis.—Dr. A. E. Halstead said that the surgical treatment of Pott's disease comprehended (1) the removal of the tubercular focus in the bone; (2) the treatment by incision or by puncture of the abscesses that are secondary to the bone disease, and (3) the operative treatment by laminectomy of the most serious of all of the complications of this disease, namely, the paraplegia resulting from pressure upon the spinal cord. The treatment of these abscesses by incision did not yield good results because of the inaccessibility of the underlying bone disease. In the cases where there was no hope of following the abscess to its source in the bone, incision should, if possible, be avoided. In this class of cases aspiration of the contents of the abscess cavity, followed by washing out of the cavity and the subsequent injection of iodoform, should be practised. In case of small abscess, one should incise the abscess and eradicate the diseased tissue, as this offered the best hope for a speedy and permanent cure. When the abscess was large, or when it appeared some distance from the diseased vertebræ, as in psoas abscess, puncture and injection of iodoform emulsion should be practised to prevent rupture and consequent mixed infection. He said the post-mortem findings in cases dying from paralysis occurring in Pott's disease presented the strongest argument in favor of laminectomy. It had been fully demonstrated that the paralysis was practically never due to an inflammation of the cord, and that the so-called myelitis was not a myelitis, but a pressure atrophy of slow development. Schmaus and others had shown by a careful study of the post-mortem records that it was only in about two per cent. of the cases that the pressure exerted upon the cord was the result of angularity of the vertebral column. In 32 cases out of 33 reviewed by Schmaus, the pressure was due to the tuberculous process breaking into the spinal cord, the immediate cause being either a tuberculous peripachymeningitis or a tuberculous abscess within the canal. The author's experience in the operative treatment of paraplegia due to spinal caries had been limited to two cases, which were detailed, one of which recovered, and the other died. He said laminectomy was contraindicated in cases in which there was tuberculosis of any other organ. In one of his cases the lung and pleural tuberculosis probably existed before the operation, although its presence was not recognized. The duration of the paralysis offered no contraindication to the operation, as it was not so much the length of time that the cord had been subjected to pressure, as the way in which the pressure was exerted that affected the integrity of the cord and determined the possibility of recovery.

Dr. M. L. Harris, in the discussion, said that the importance of an early diagnosis had been very well emphasized, and the statement also made, which was eminently correct, that mistakes in diagnosis were usually made because of omission on part of the surgeon or the physician to recognize certain points which were well known. These were errors of omission. The rigidity which had been emphasized as the early symptom was present in such a number of conditions about the cervical region that more attention should be devoted to this region in the differential diagnosis than to rigidity in other regions of the body. That is to say, there were so many conditions which might occur about the head and the neck which would produce rigidity of the cervical spine that one must make a differentiation. One of the important points to be observed in rigidity of the cervical spine as indicating the involvement of the spinal column itself was the relief which came from extension. For instance, take a child with a rigid neck, by gently extending the head and relieving the pressure, consequently pain, considerable motion might be given to the head without resistance on part of the patient. If one found relief of rigidity by this extension, it was certain evidence that the trouble was in the spinal column itself. If the rigidity was due to any extraspinal trouble, it was almost always increased by extension and by motion. With regard to the treatment of abscesses, as long as a tuberculous abscess of spinal origin was not increasing in size, he thought it should be left alone, as many of these abscesses disappeared by proper mechanical treatment. Only when they increased in size, in spite of conservative treatment, and when they were approaching the surface and seemed as though they would rupture spontaneously, something should be done by the surgeon. One should always attempt to cure these abscesses by the so-called subcutaneous method first, that is, aspirating them, and after washing them out, injecting them rather than opening them, in order to avoid secondary and mixed infections. In emptying these abscesses by means of a trocar, for instance, great care should be exercised not to produce unnecessary pressure on the abscess, as by so doing one was liable, particularly if the trocar became occluded by the caseous

masses, to infect the tract around the trocar, and one would have spontaneous opening of the tuberculous tract soon after in spite of anything he could do. The trocar should be introduced from some distance, to prevent, if possible, the escape of any of the fluid about the trocar, or following the trocar after it had been in the joint. He had seen infection follow the track of the trocar in a number of cases. He had used carbolic acid for a long time in injecting these cavities; it was preferable, as a rule, to iodoform emulsion.

Dr. Frederick Müller said that early diagnosis in every case of Pott's disease was of the greatest importance, and although we did not have any means of stopping the tuberculous process proper, we might succeed sometimes in restricting the deformity which would always follow the establishment of a tuberculous process in the vertebral column. The treatment which had been advocated was mostly conservative, which supported or extended the vertebral column, thus confining all surgical intervention to the treatment of abscesses and paralysis. Different kinds of appliances and apparatus had been mentioned. They were all useful in treating these cases, and no doubt good results could be obtained by employing them, but he did not think it was possible to give preference to a special brace in all cases. He said the Lorenz apparatus was very effective in these cases. It had more advantages than the Bradford frame, because in the Bradford frame the patients were able to make lateral motion, whereas in the Lorenz plaster bag or apparatus the patient was kept always in the same position. This apparatus consisted of a posterior case of plaster-of-Paris which included the head, neck, back, and pelvis, and was well padded. Dr. Müller then discussed the pathology of the paralysis in cases of spondylitis, and said that Schmaus, of Munich, about ten years ago, found that paralysis in cases of Pott's disease was due to a kind of inflammatory edema, which was caused by the establishment of the tuberculous process in the surrounding membranes of the medulla. This edema might last for years, or it might either disappear or terminate in a real myelitis. If the latter occurred, then the patient had permanent paralysis, whereas in the first instance the motility returned and the patient recovered. He referred to the treatment of Pott's disease as advocated by Calot about eight years ago. As to the treatment of paralysis, he mentioned laminectomy, saying that most of the surgeons who had operated on cases of paralysis by laminectomy had said that the paralysis disappeared independently of the operation that had been performed. He had seen two cases of paralysis in Pott's disease treated by the Calot redressment, and he was convinced that this treatment was very effective for paralysis. At all events, it saved patients from surgical intervention which might be fraught with great inconvenience and serious results.

Dr. Ridlon said, in referring to the remarks of Dr. Harris, that an abscess should not be interfered with unless it made the patient sick, no matter whether it was three inches, or one-eighth of an inch from the surface. If, however, it made the patient sick, it should be removed.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, held April 11, 1904.

The President, Thomas E. Satterthwaite, M.D., in the Chair.

Counter-Opening in the Vagina for Artificial Bladder Drainage.—The first paper of the evening, by Dr. Nathan G. Bozeman, was on this subject. He said that perhaps the earliest mention of the procedure for establishing a vesicovaginal fistula for the relief of chronic cystitis was in the registry of the Woman's Hospital, New York, in 1858. In consultation with the patient's physician, Dr. J. Marion Sims, the record states, proposed to make an artificial opening in the base of the bladder for the purpose of allowing the free escape of urine, in the hope that by this means a new action would be set up in the walls of the bladder. Little or no profit resulted from this treatment, however, and in July, 1858, she applied for the closure of the vesicovaginal fistula. Up to this time it is natural to suppose that an artificial fistula had never been deliberately made, because it was only at this period that Drs. Sims and Nathan Bozeman made such advances in surgical treatment that it became easy, and vesicovaginal fistulæ could be closed with more certainty. In his book, Dr. Emmet says that shortly after this colpocystotomy became a recognized treatment for chronic cystitis at the Woman's Hospital, at that time the only public institution for special treatment of women. Having referred to his father's work in the matter of artificial vesicovaginal fistula, Dr. Bozeman said that the problem of artificial drainage had presented itself because of the incalculable advantage it would be to the patient to be freed from the constant dribbling of urine as long as the opening in the bladder was maintained. An instrument was evolved which could be worn in the vagina, having a soft rubber urinal attached by means of a soft rubber tube. The improvements since made in this apparatus have been such as observation and experience in numerous cases have suggested. The cervix uteri and vesicovaginal septum rest upon the concave surface, the close adaptation of these parts and the vaginal walls rendering it self-sustaining. Urine and secretions percolate through round orifices into the interior, collecting in quantities of one-half to one ounce, or more, when they are voided through the tubes into the urinal. The latter may be either attached to the knee or placed in the bed, according as the patient is on her feet or reclining. The vaginal receptacle being once filled, the urine (there being no cushion of air in the tube to impede it) flows quickly out, and subsequently frequent intermittent discharges take place when there is only a small accumulation. (The apparatus was here presented for inspection.)

Dr. Bozeman then cited three illustrative cases in which there were injuries to the walls of the bladder which healed kindly when physiological rest and drainage of the organs was successfully established by means of his air and water irrigator and the vaginal drain. In the first the patient had been operated on at the Johns Hopkins Hospital by suprapubic cystotomy to remove a tuberculous ulcer from the bladder wall. Three months afterward an abscess developed and discharged in the abdominal scar. Through this sinus urine soon escaped, and after three years feces and flatus escaped through it, as well as being voided by the urethra. To relieve the cystitis and constant vesical tenesmus present an artificial vesicovaginal fistula was made, and at the same time a quantity of adenoid growths were removed from the bladder. Continuous irrigation of the bladder was then applied by the Bozeman irrigator for ten days, when a vaginal drain was fitted. Since then, two years ago, the patient has not suffered from bladder symptoms, and she keeps herself free of the discomforts of dribbling urine by wearing the drain continuously. In this case, he said, an attempt to close the fistula would not be advisable even now, because the bladder cavity is much contracted and is constantly filled with adenoid vegetations, which have to be removed from time to time through the fistula. The second case, that of a professional nurse, was one of unusual interest. In 1898 the patient began to have recurrent attacks of cystitis. In

1900, after the voluntary escape of the contents of a painful swelling in the right inguinal region into the bladder, flatus and fecal matter commenced passing by the urethra. Dr. Bozeman made a diagnosis of adherent ovarian tumor on the left side, with a communication between the bladder and intestine through some dense adhesions. He opened the abdomen, removed the cyst, and after tying them by double ligature severed the adhesive bands which were found between the bladder and intestines. Subsequently developments showed that a communication still existed between the intestines and bladder; but it was deep down under the broad ligament and could not be reached by opening the abdomen. After severe constitutional symptoms and local pain had continued for some time, there appeared in the right lumbar region a tumor which was evidently the pelvis of the kidney distended by urine and pus. Having made an opening into the bladder, he passed a catheter ten inches into the ureter, when it met with resistance. This was gradually overcome, and bloody, purulent matter was drawn from the pelvis of the kidney. The opening of the sinus into the bowel was found to be located by the side of the urethral orifice. The catheter was left in place twelve hours, the tumor subsided and the symptoms abated. In a short time no more gas or fecal matter passed into the bladder, and the urine became clear. Considering the debilitated condition of this patient, he might have hesitated to perform the operation he did had he not felt positive that he could keep her perfectly dry by means of his irrigating apparatus. She now wears the drain as she goes about her duties as nurse, but she hesitates to have the opening in the bladder closed. In the third case there was an opening in the bladder wall, about an inch and a half in diameter, which was the result of sloughing following an operation for the relief of an inguinal hernia with incarceration of intestine and bladder, with firm adhesions in the inguinal canal. An attempt had been made to close the fistula, a catheter being retained in the urethra for drainage, but it resulted in failure. Dr. Bozeman, having been called to see the case, first established a vesicovaginal fistula, and then, with much difficulty, dissected the bladder free from the densely indurated borders of the suprapubic opening. This was closed by a continuous chromicized catgut suture, and a second row of silkworm-gut sutures brought the muscle and integument as well together as it was possible to do. After the operation his continuous irrigator was employed, and the suprapubic opening soon healed. After ten days a drainage instrument was adjusted, and at the end of ten weeks the artificial vesicovaginal fistula was closed. The attempt to drain the bladder in this case by simply making a vesicovaginal fistula would have proved futile. In conclusion, he maintained that in all cases, after an artificial fistula has been made into the vagina, a system of irrigation and drainage similar to that described is absolutely necessary, both for its efficacy and for the comfort of the patient.

The Treatment of Tuberculosis of the Larynx and Prostate by the X-ray, High Frequency Currents and the Cooper Hewitt Light.—Dr. Sinclair Tousey read a paper with the above title. In regard to this sort of treatment for tuberculosis of the prostate he said he had not been able to find anything in medical literature. As regards the treatment of tuberculosis of the larynx by the Roentgen ray, Williams says: "The successful treatment of lupus by the X-rays should lead us to try them in laryngeal tuberculosis," and as long ago as 1897 Revillet reported their use in a case of acute pulmonary and laryngeal tuberculosis. Pusey and Cauldwell think they should be employed as an auxiliary to other treatment, and in their book is figured an X-ray tube for the treatment of the larynx. Having given a digest of the literature of X-ray treatment for pulmonary tuberculosis, Dr. Tousey stated that his own opinion at the present time was that judicious application of the X-ray or of the ultraviolet ray and high frequency currents is indicated in every case of tuberculosis. Treatment of tuberculosis of the larynx by the violet and ultraviolet rays, as produced by the electric arc light in its various forms, has been employed by Freudenthal in a number of cases with good results as regards pain and dysphagia, but no perceptible effect upon the tubercular infiltration or ulceration. He can see in the electric light only an adjuvant to the host of other remedies at our disposal, though an adjuvant that is of great assistance in some instances.

Dr. Tousey reported the case of a lady now under treatment for tuberculosis of the larynx. When first seen she had had throat trouble for three years and her weight had become reduced from 130 to 103 pounds. She was running a temperature of 102° F., and during the last four months had had profuse expectoration full of tubercle bacilli, and a visible tuberculous deposit in the larynx. She was constantly coughing and expectorating, and could scarcely speak above a whisper. There was considerable loss of strength, though she presented very little evidence of pulmonary trouble. His treatment was begun December 15, 1903, and consisted in exposure to the X-ray once in every four or five days, and exposure to the Cooper Hewitt light and application of high frequency currents once in each interval between the X-ray applications. In applying the X-ray he employed an 8-inch coil run by current from the street (110 volts direct current), using a liquid interrupter of his own devising. By it the current through the primary coil is interrupted at the rate of about ten thousand times a minute, and each such current passing through the primary coil induces a current of very high voltage in the secondary coil. From the two poles of the latter, wires pass to the two poles of the X-ray tube, the negative terminating in a concave mirror within the tube (the cathode), and the positive in a platinum disk in the center of the tube (the anode). In this case two different tubes were used; first, a Gundlach heavy anode tube of 60 cm. capacity, and later a Müller heavy anode tube of 50 cm. capacity. Both were provided with regulating devices, and the degree of vacuum was so adjusted as to give the greatest photochemical effect which could be combined with sufficient penetration to pass through the entire thickness of the chest. The distance from the nearest surface of the chest to the anode was about ten inches, and the time of exposure about five minutes in front and five minutes behind. The face and scalp were shielded by a sort of cap made of X-ray metal. Following the general exposure of the chest to the X-ray, a special application was made to the larynx by means of a tube made of lead glass opaque to the X-ray, with the exception of a cylindrical prolongation, into which the rays are directed from the anode and from the transparent end of which they emerge. The names of Cauldwell, Morton and Cossar have been associated with this tube, in which some trifling modifications have been made by Dr. Tousey. The tube is held close to the outside of the throat. The current employed is milder than that employed for the chest, and the exposure, which is maintained for only about three minutes, is distributed over different aspects of the larynx. The high frequency currents are obtained from the same 8-inch X-ray coil by means of the d'Arsonval transformer. A series of sparks passes across a spark-gap enclosed in a glass cylinder, and the vacuum electrode becomes filled with ten thousand waves a minute of ultraviolet and violet light passing into the surface of the body. A very large amount of ozone is also gen-

erated and carried into the body by the electric current, and this is regarded as an important feature of the application. The intensity is controlled by regulating the current in the X-ray coil and the length of the spark-gap, and the proper strength appears to be one devoid of prickling sensation, but sufficient to warm up the vacuum bulb when it is in contact with the skin. Dr. Tousey's vacuum electrodes have no wires. The lamp made for him by the Cooper Hewitt Company is actuated by the street current reduced by a rheostat to 5 ampères with 110 volts; this current passes through a vacuum tube 24 inches long and 1 inch in diameter, which contains vapor of mercury and at one end a certain amount of liquid mercury. The light given out has 400 candle power and its spectrum is almost pure violet, containing the chemical and life-giving properties of sunlight intensified about a hundred times. This light is applied for nearly fifteen minutes in front and for the same length of time behind the chest, from a distance of five or six inches.

The results of treatment have been as follows: Disappearance of expectoration (which took place in three weeks); very great improvement as to the voice; reduction of temperature to normal; marked gain in strength; and a gain in average weight of about two pounds. Considerable improvement has also occurred in the matter of swallowing, difficulty in regard to which appeared to be entirely psychic. As regards the local condition, before the treatment was commenced Dr. Richard Kalisch found an area of swelling and hyperemia below the left ventricular band, with a distinct line of abrasion, though hardly ulceration. He now finds the area of infiltration diminished and the abrasion healed, with a whitish appearance which may be due to cicatrization.

In tuberculosis of the prostate and bladder Dr. Tousey's treatment consists (1) in having the light from an ordinary X-ray tube shine obliquely downward through the lower portion of the abdomen and also occasionally through the perineum. (2) Alternating with the perineal application, a special X-ray tube is introduced into the rectum. This tube is made for the most part of lead glass opaque to the X-ray. It has an anodal disk; its cathode stream is directed down a cylindrical prolongation of the transparent glass, from which the X-ray emerges in all directions. This prolongation is cooled by a continuous current passing through a water-jacket. The application lasts for only a couple of minutes. (3) The application of high frequency currents over the lower portion of the abdomen, and also in the rectum on occasions when the intrarectal X-ray tube is not employed. For the intrarectal application of high frequency currents a special vacuum electrode is employed in which the tube is insulated, except for its distal two or three inches, by a separate external cylinder of glass. The application lasts five minutes.

Tuberculosis of the Bladder and Prostate.—A patient now under treatment is Mr. M., aged thirty-one years, who for several years has had this affection. A year ago he was treated with the X-ray, the application being made daily by allowing the light to shine upon the lower part of the abdomen while the patient stood up in front of the tube; also by the application of vacuum electrodes connected directly with the X-ray coil without the d'Arsonval transformer. Following this treatment, several enormous pus sacs formed and after causing months of suffering emptied into the bladder. When he came to Dr. Tousey, December 23, 1903, he was urinating 25 to 30 times a day, the urine looked like a mixture of blood and pus, and microscopical examination showed the presence of tubercle bacilli. On rectal examination the prostate was found to be moderately enlarged and tender. He has been treated twice a week, and irrigations have been continued. There were at first considerable pain and irritation in the urethra, and scales could be washed out of it. This condition has been relieved by X-ray applications, the penis being held up against the abdomen during the treatment. The patient's weight has increased from 147 to 152 pounds, there has been no formation of pus sacs, as before, and his comfort and strength have uninterruptedly improved. The frequency of micturition has markedly decreased, so that at times he is able to go five hours without urinating. The urine is much clearer, and no visible blood has been present in it for two months. The microscopical examinations showed at first an increasing and lately a rapidly decreasing number of tubercle bacilli. The last examination, a day or two since, shows only an occasional bacillus.

Dr. Tousey then gave a demonstration of the special apparatus described in the paper and also of a method of skiagraphy in which the picture is produced directly upon sensitized paper and may be developed in any dimly lighted room. A photographic dark room is not required, and the whole process occupies but a few minutes.

Unfortunate Results from X-ray Treatment.—Dr. H. Holbrook Curtis had seen very unfortunate results from X-ray treatment in three cases of laryngeal tuberculosis. The application, he believed, was apt to be followed by bleeding. He had supposed that high frequency currents produce effects opposite in character to those of the X-ray, and he could not well understand why they should both be used in the same patient.

Encouraging Results from High Frequency Currents.—Dr. W. Freudenthal said he had used the X-ray in a few cases, but did not feel that he had had sufficient experience to form a positive opinion in regard to its effects. He did not introduce a tube into the patient's mouth. In employing high frequency currents, however, he had introduced the electrode directly into the larynx, and he had had some very encouraging results from the method. The incipient cases of tuberculosis got better under it. In the secondary and tertiary stages of the disease he had been able to abolish pain to a large extent, and this was undoubtedly a great item. There were cases in which the affection improved in the lungs, but did not in the larynx. The violet rays did not seem to penetrate the cartilage, but a method had now been devised by which the red and yellow rays could be rendered just as efficient as the violet.

Failures Much More Numerous Than Successes.—Dr. Albert C. Geyser said it was proper that in his digest of the literature of the treatment of pulmonary tuberculosis by the X-ray Dr. Tousey should have given the failures, as well as the successes. It was noticeable, however, that the failures were far in excess. In a large number of instances it did not seem to make any difference what treatment was employed. If patients were inspired with a feeling of hopefulness they improved for a time under any kind of treatment. Then came the reaction, and they began to go down-hill. He himself had treated five cases of tuberculosis of the larynx with the X-ray. Of these three died, one grew positively worse, and one had disappeared. He did not think that any effect could be got from applications external to the larynx. The high frequency currents were stimulating. Their effects were exactly opposite to those of X-rays, and, like Dr. Curtis, he was somewhat at a loss to understand why both these should be employed on the same patient. He trusted sincerely, however, that Dr. Tousey, with his three kinds of light, would have better success than some other observers had had.

Tuberculosis of the Urinary Tract.—Dr. H. G. Spooner said that the action of high frequency currents and of the X-ray on tubercle bacilli was essentially the same. The bacilli first rapidly increase in number and show a tendency to form clumps, then they gradually diminish and become paler in color. The general improvement of the cells of the body probably makes them more resistant to the invasion of the tubercle bacilli; but whether the vitality of the bacilli is lowered or whether the raising of the vitality of the cells, or a combination of both is at work, we do not know. Now, inasmuch as fresh air and an outdoor life have proved of signal service in many of the cases of urinary tuberculosis, it would seem to be but reasonable that the X-rays and high frequency currents, by stimulating the cells of the entire body, should have a sphere of usefulness in genito-urinary tuberculosis, particularly of the prostate, as an aid to hygiene, diet, etc.

High Frequency Currents Probably More Efficient Than the X-ray.—Dr. Joseph W. Gleitsmann said that he had not as yet formed a decided opinion in regard to the relative value of the different lights. He could say, however, that the X-rays had not given the satisfaction which he had expected. He had seen better results from high frequency currents locally applied. In conditions other than laryngeal tuberculosis, such as glandular swellings of the neck, this form of electricity appeared to be quite beneficial. In tuberculosis he had met with no results to speak of.

BOOK REVIEWS.

A System of Practical Surgery. By Prof. E. von Bergmann, M.D., Prof. P. von Bruns, M.D., and Prof. J. von Mikulicz, M.D. Volume I. Translated and Edited by William T. Bull, M.D., Professor of Surgery, College of Physicians and Surgeons, Columbia University, New York, and Walton Martin, M.D., Instructor in Surgery, College of Physicians and Surgeons, Columbia University, New York. Surgery of the Head. Lea Brothers & Co., New York and Philadelphia.

The appearance of this work in English has been looked for with much interest and now that the first volume is in our hands we shall await the others with a still greater degree of pleasurable anticipation. The character of the original and the names of the American editors are such as to justify the most extravagant expectations and yet it is no exaggeration to say that these have been more than realized. There is a distinct gap in our surgical literature, which this work seems well adapted to fill, for, while there is an abundance of excellent surgical treatises of the less comprehensive type, no American system of really pretentious scope has appeared of recent years. In its German form the present work achieved such a popularity that the earlier volumes were appearing in a second edition before the later ones had all been issued, and translations have already been made into several other languages. The names of v. Bergmann, v. Bruns, and v. Mikulicz are such as to attract attention singly, and in combination they form an editorial trinity hardly to be excelled among continental surgeons. Given such a groundwork as was afforded by the second edition of their production, it is not surprising that the American editors with their collaborators should have succeeded in bringing forward a work which will probably remain for years the court of last resort in questions of surgical theory or practice. The German text has in many instances been enriched by descriptions of improvements in technic devised by American surgeons, and also by increasing the number of illustrations which almost without exception are both interesting and useful.

This volume on the surgery of the head is the work of eight authors, including such prominent men as v. Bergmann, Krause, Krönlein, Kümmel and Schlatter. Separate sections are devoted to the skull and its contents, the ear, the face, including plastic operations, the neuralgias of the head, the salivary glands, the jaw, the nose, the mouth and the pharynx. This purely regional arrangement has made appropriate assignment of the material easy and each section is the work of a man whose name has become prominent in respect to that particular field. Thus the monograph on the injuries and diseases of the skull, as written by v. Bergmann, stands out with an authoritativeness no less celebrated a writer could impress upon it and Krause's discussion of the cranial neuralgias possesses unequaled interest and value.

With a work laid out on such broad lines and covering the field with such wealth of detail, it is impossible to single out separate topics for special discussion. In every section which the reviewer has perused the impression has been one of extreme thoroughness and reliability combined with much attention to the practical application of the principles laid down. The translation has been well carried out and an agreeable smoothly following text produced. In every respect the work seems destined to secure for itself a place among the most important contributions to the study and practice of surgery and will no doubt command the most widespread attention.

Le Malattie dei Paesi Caldi Loro Profilassi et Igiene (Diseases of Warm Countries, their Prophylaxis and Hygiene). Ulrico Hoepli, Milan.

This little volume contains in brief space a wonderful amount of observation with regard to the diseases of warm countries, their prophylaxis and hygiene. It is of all the more interest now, since our own possessions in the American tropics as well as in the East and the work on the Panama Canal are likely to bring the physicians of our larger seaboard towns in touch with many more of the specific diseases of warm countries than was the case before. The volume also contains an excellent account of the various cutaneous affections due to parasites that inhabit the various warm countries.

There is an appendix to the little volume regarding life in Brazil that will be of special value to those contemplating a residence in that country. This gives details not only with regard to the special diseases of Brazil but also its fruits and plants as well as its animal parasites, its snakes, especially the poisonous reptiles, its spices, and so forth, which are the result evidently of information gathered during travels in that country.

The general impression gathered from the book is that the diseases of hot countries are by no means so frequent or inevitable by the foreign-born resident as has been thought and that the removal to a tropical climate is by no means necessarily the almost fatal step it has been considered. The white race is evidently destined to play a much more important rôle in the tropics than has hitherto been imagined.

La Rachitide, E Le deformita da essa prodotte—(Rachitis and the Deformities Produced by It). By P. Mancini, M.D., and Manuele Hoepli. Ulrico Hoepli, Milan.

This little volume, with some 116 illustrations in the text, contains an excellent review of our present knowledge to date of this serious bone condition, which has

so long been a source of interest to physicians and pathologists, and yet has, in spite of all the study devoted to it, retained something of the mystery it had at the very beginning.

The chapters on prophylaxis and cure occupy nearly one-half the book and contain many valuable suggestions as regards diet, drug treatment, exercises of various kinds, so as to prevent misdevelopments, and finally, orthopedic treatment. The whole is evidently written by a man who has been deeply and practically interested in the subject about which he writes and whose experience cannot help but be of value to others. It is very evident that this little series of manuals is going to be of great suggestive value to all those who, outside of Italy, can read Italian, as well as to Italian physicians themselves.

Elettricita Medica (Medical Electricity). By A. D. Bocciardo, M.D. Ulrico Hoepli, Milan.

This little volume, which forms another of the series of the Hoepli Manuals, contains a better résumé in a shorter space of modern electricity and its application to medicine than anything the reviewer has hitherto seen. Writers on the subject in English would certainly do well to consult this unpretentious manual when compiling or revising their books. It is well illustrated and is thoroughly up to date. Those interested especially in the subjects it treats, which include the use of the Roentgen rays, phototherapy, and radiotherapy will find it to their advantage to consult it because of its suggestive practicalness.

A Handbook of Ophthalmic Science. By Henry E. Juler, F.R.C.S., Ophthalmic Surgeon to St. Mary's Hospital, Consulting Surgeon to the Royal Westminster Ophthalmological Hospital, Consulting Ophthalmological Surgeon to the London Locke Hospitals. With illustrations. Third edition. Revised and enlarged. Lea Brothers & Company, New York and Philadelphia.

This excellent book appears in the third edition with few changes, and deserves the consideration it has received in the past. It expresses in great part the personal attitude of its author, and in this respect is perhaps more interesting than many books which are more modern in attitude, and more elaborate in detail. The treatment of the subject is conservative and commands respect, although in some instances the point of view is somewhat different from our own. Very little attention is given to methods which have not been thoroughly established. The book is, therefore, a safe guide for the student. But it must not be thought that the most recent steps in ophthalmology have been ignored. The operative treatment of myopia, and the operation of sympathectomy for glaucoma are mentioned. It is truly stated of the latter that it is doubtful whether a favorable result is permanent, but the statement that the operation is accompanied by severe constitutional symptoms cannot be accepted, if the operation is properly done. This operation is still *sub judice*, and the discussion should not be confused by a mistaken idea as to its apparent gravity. The chapters on cataract and its treatment and on refraction are commendable, although one might differ with regard to the value of tests for astigmatism. Very few, we fancy, would give first place to the use of the stenopeic slit, but the fact that it is overlooked in other books makes its prominence here of interest.

Retinoscopy is given sufficient consideration.

The chapter on the ocular muscles is adequate, except the brief consideration of heterophoria, which, to many of our modern specialists, may seem incomplete, but perhaps that is an error on the safe side.

The illustrations are numerous, and for the most part excellent. The colored plates, 17 in number, are a little hard and crude in color, but they are quite as accurate and helpful as others in which the printing has been more successful. The diagrams are clear and decidedly helpful. There are appendices giving formulæ, visual tests and numerous semidiagrammatic plates illustrating the normal and pathological histology of the eye. The index is excellent. The work of the publishers leaves something to be desired, the binding is rather weak. The typography, however, is good, and it is a pleasure to note the use of paper which is slightly cream in tone, and has a dull surface.

A Manual of Psychology. By G. F. Stout, M.A.Camb, M.A.Oxon., LL.D., Aberdeen, Wilde Reader in Mental Philosophy in the University of Oxford; Examiner at London University; Editor of *Mind;* etc. Hinds & Noble, New York.

As might well have been expected, the editor of *Mind* has produced an excellent manual of psychology. With the thoroughness of an English writer he has combined something of the popular note in scientific writing which is so much more characteristic of American writers on scientific subjects. The book is likely to be of interest to physicians, because Dr. Stout is convinced that the study of psychology is of no use to the student unless he is able to live himself into psychological problems so as to acquire a real power of thinking for himself on psychological topics. For this purpose, cut and dried statements and the skimming of important questions are of no avail.

The reviewer notes some of the passages which in reading have particularly drawn his attention to the value of the book for physicians. In the chapter on Emotions in the discussion of unfamiliarity and the effects of fright there is the story of the dog who was frightened into a sort of epileptic fit by a bone being drawn across the floor by a thread which he did not see. The chapter on Memory contains a number of passages that are likely to be suggestive to physicians. The same thing may be said with regard to the chapter on Voluntary Decision, the reading of which makes many of the peculiar phases of the doubting mania or *folie de doute* of the French, more clear. In general, the book contains an excellent résumé of modern psychology that cannot help but be useful to those interested in psychological problems, either from the educational, the social or the humanitarian standpoint.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear:*

Pain and Its Indications. By Dr. E. C. Hill. 12mo, 328 pages. G. P. Engelhard & Co., Chicago.

Medical News Pocket Formulary. 12mo, 287 pages. Lea Brothers & Co., New York and Philadelphia.

Immune Sera. By Dr. A. Wasserman. Translated by Dr. C. Bolduan. 12mo, 75 pages. John Wiley & Sons, New York.

American Year-Book of Medicine and Surgery. Edited by Dr. G. M. Gould. 8vo. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

Manual of Clinical Microscopy and Chemistry. By Dr. H. A. Lenhartz. Translated by Dr. H. T. Brooks. 8vo, 412 pages. Illustrated. F. A. Davis Co., Philadelphia.

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ORIGINAL ARTICLES.

SOME CONSIDERATIONS ON INFECTION AND IMMUNITY.[1]

BY THOMAS E. SATTERTHWAITE, M.D.,
OF NEW YORK.

THERE are certain epochs in the study of vexed questions, when a knowledge of their *status praesens* is desirable. We have now reached such a period, with reference to the somewhat obscure topics of infection and immunity. It is the purpose of this paper to supply this information, so far as a brief statement of facts, stripped of unnecessary technicalities, makes it possible.

When Pollender,[2] about the middle of the last century discovered the bacillus of anthrax, the first notable impulse was given to the study of infection. A little later Davaine produced the artificial disease in animals by injecting blood containing these bacilli. Pasteur in his turn cultivated the bacilli in nutrient fluids and produced "pure cultures." Later, Koch separated different kinds of bacteria by "plate cultures," and "cultures in solid media." Novel methods of staining and the use of special objectives further aided in differentiating one species from another. This brief outline of facts introduces us to the present bacteriological aspect of infection.

So far as immunity is concerned, after it had been secured from smallpox by vaccination, the next step was made by Pasteur, working on the assumption that a mild form of the disease might produce exemption. He "attenuated" the virus in several ways, and his methods for inoculating cattle and sheep against anthrax have been widely used and highly approved. The discovery of the antitoxins, however, we owe to Salmon and Smith of this country. But the method of preparing them is generally attributed to Behring. These discoveries have been of inestimable value in the saving of life. For experimentation has shown that infection is caused by microscopic vegetable or animal life, or their products.

In diphtheria and tetanus the infecting agents are referable to microorganisms of a vegetable character. Malaria, amebic dysentery, the "Texas disease" and "surra" in horses and mules however, are due to protozoa, in other words to microscopic animals; while there is always a possibility that yellow fever, scarlet fever and smallpox may be found to be caused by allied animal organisms, though as yet satisfactory proof is lacking. But so far as we now know, bacteria are the chief causes of disease, and the infecting bodies in tuberculosis, typhoid, glanders, gonorrhea, anthrax, tetanus, bubonic plague, suppuration, erysipelas, lobar pneumonia, influenza, diphtheria, ordinary dysentery, cholera and relapsing fever are believed to have been discovered, although they cannot all stand the test of Koch's well-known law, which is

1. That the microorganisms must be found invariably in a given disease and in no other, their numbers and distribution conforming to the lesions of the disease.

2. That the organisms obtained from lesions of the disease must be capable of reproduction in pure cultures.

3. That these cultivated germs must be capable of producing the disease if inoculated on a susceptible animal.

4. That these artificial lesions contain the specific organisms.

Of the list thus given cultures of the bacteria of bubonic plague and glanders have on several occasions communicated these diseases to laboratory workers, and sometimes have caused death. In others such as leprosy, there is doubt whether the bacillus has been successfully cultivated, certainly, inoculation experiments have yielded uncertain results; while erysipelas appears to have no specific bacterium, and to be due rather to the *Streptococcus pyogenes,* one of the pus-producing bacteria.

There is no doubt that the requirements of Koch's law are severe. It is one thing to see a successful development of the inoculated culture within the body of an animal, and another to reproduce the disease with its clinical signs. This latter requirement has been the great stumbling block for laboratory workers.

There is also a strong presumption that the infecting agent is bacterial in syphilis, mumps, measles, whooping cough, typhus, hydrophobia, dengue, acute inflammatory rheumatism and beriberi, but the proof is still lacking just as in yellow fever, scarlet fever and smallpox.

Possibly some of these organisms are so minute, that they cannot be differentiated by our present microscopes. Nor has the last word been said as to the morphology of the bacteria with which we have to do.

But there is another class of microcytes that are concerned in causing disease. These we call fungi. They are usually classed among the mold or yeast fungi. Of these a conspicuous example is actinomycosis, which causes the "big head" of cattle, and occasionally occurs in the human subject. Another is the *Leptothrix buccalis,* which causes the gangrenous inflammation of the mouth called "noma."

The *Aspergillus niger* may also produce a disease of the external ear, or complicate a bronchial pneumonia, in which latter case it will be a secondary infection. These microcytes, which

[1] Introductory to a Symposium on "The Combat with Infection," American Therapeutic Society, June 4, 1904.
[2] As early as 1849.

like the *Aspergillus* live on dead matter, are called saprophytes, and they are classed as facultative, if they have the inherent power of infection independent of contamination from sources outside of the body.

Evidently then, according to our present information there are three sources of infection. The most common appear to be bacteria, less often fungi; and least of all, protozoa, though the latter are certainly assuming a greater numerical importance.

Allusion has been made to the fact that bacteria may not cause infection directly. This discovery was due to the study of the *bacterial* poisons called *ptomaines,* which could be easily isolated. For a ptomaine may be regarded as an organic chemical compound, toxic in character, formed by the action of bacteria on nitrogenous matter.

Now the poisonous effects produced by the inoculation of some of these ptomaines on animals led to the supposition that analogous substances formed by the specific bacteria of infective diseases *might* account for their characteristic symptoms. But research has not determined the intimate nature of these bacterial products. We know they are poisonous and call them *toxins,* but their composition is unknown; in fact it has been found impossible to isolate them so completely as to establish their chemical characters. And yet they have been obtained from the bacteria, not only of diphtheria and tetanus, but of other diseases.

There is also some evidence to indicate that other specific bacteria elaborate poisonous products. In fact bacteria as a rule generate special poisons, though in typhoid fever and in cholera certainly, the poisons remain for the most part inside the bacterial bodies.

From our present standpoint, the question of incubation offers few difficulties. At the beginning of an infective disease, the infecting bacteria are comparatively few in number, and their toxins small in quantity. But both develop proportionately, the elevation of temperature and constitutional symptoms keeping pace with their development. When enough poison has been generated, the disease manifests itself by characteristic signs. The time required for this purpose will depend on the quantity or virulence of the initial dose, and the resistance offered in the body.

These circumstances may account for the variability of the duration of incubation. That it is even tolerably uniform in the various infections is quite remarkable.

The term *contagion,* in the narrow sense, suggests that it should be limited to diseases communicated by direct animal contact. But even in the most virulent of them, such as gonorrhea, the contact may be mediate, rather than immediate, contaminated objects, such as soiled linen, serving as vehicles for spreading the disease. In yellow fever, also, the *Culex fasciata* appears to carry the poison, while the tsetse fly of the East, infected with the *Trypanosoma* inoculates horses and other animals, and even man occasionally, producing the fatal "surra." Rats, and probably flies, ants and fleas are also the intermediate hosts of the plague germ. Evidently then, in these most characteristic contagious diseases, there is infection, and therefore they are infective. On the other hand, infective diseases may not be contagious. Epidemic cerebrospinal meningitis is an example. It is infective, but not contagious in the ordinary sense, that is, it does not appear to be carried from person to person.

Infection accordingly may be mediate or intermediate, direct or indirect. Anthrax, typhoid, cholera and diphtheria can be propagated in either way. For typhoid and cholera can be transmitted through the media of water, in which they can live, if only there is a very little albumin; or directly from the excreta. Diphtheria can be communicated through the medium of milk, or by contact with an infected person. The possibility must be borne in mind, however, that these and the bacilli of typhoid may have a mycelial growth like the fungi; even that sometimes they may be facultative saprophytes, *i.e.*, that they can develop *de novo* in suitable dead material. On this point however, it is true, the evidence is unsatisfactory. In some affections, like tetanus and diphtheria the pathogenic bacteria have only a local manifestation; in others like anthrax, they may infect the blood throughout the system.

Obviously, from a therapeutic point of view there is a vast difference between the two. But these conditions are not constant. For example, in the experimental anthrax of guinea-pigs the disease is apt to be systemic, while in mankind it is apt to be local. A mouse inoculated with anthrax in the end of his tail, may die in less than a day, while an individual whose hands have been poisoned by handling anthrax hides, may have only a comparatively mild local affection.

In fact, the behavior of any animal toward an infection varies according to the species, the individual, or circumstances. The frog is refractory to anthrax under normal conditions. The resistance of the guinea-pig to the diphtheritic poison may be acquired by successful inoculations; so that finally a dose that would be fatal under ordinary circumstances may cause no reaction at all. In the discussion of this subject also, it should be borne in mind that there is apt to be a wide difference between the human disease and the experimental of animals, both as to symptoms and lesions. If a rabbit is inoculated with a bit of diphtheritic membrane, it will usually sicken or often die, but no membrane will appear on any mucous surface. In seventy inoculations[1] practised on rabbits, by Dr. Edward Curtis and myself, with known diphtheritic poison, in the aqueous infusions of pure membranes (plain, boiled and unfiltered), porous clay filtrates, putrid infusions (plain and boiled), and others intermixed with salicylic acid, in no in-

[1] "Pathology of Diphtheria." N. Y. Bull. of the Board of Health, Feb., 1877.

stance was there any diphtheritic membrane found on a mucous membrane of these animals, though autopsies were made on twenty-five of them, usually with great care. Nor did paralysis occur in any one of them.

It is said, however, that if the vaginal mucous membrane of young guinea-pigs is inoculated with diphtheria bacilli, a pseudomembrane will appear there; and yet it is to be remembered that a pseudomembrane apparently similar sometimes occurs independently of diphtheria, when mucous membranes are inflamed. In tetanus, however, there is a marked resemblance between the human disease and the artificial of animals, even to the character of the spasms. On the other hand, in diseases such as anthrax, glanders, and foot and mouth disease, which occur both in men and animals, there is sometimes an extraordinary similarity in the symptoms; but they are never alike.

It can certainly be said of the lesions of tuberculosis that they are unlike in men and animals. As long ago as 1882[1] I called attention to this point, for in investigating the pathological lesions of pleuropneumonia in cattle, I had the opportunity of seeing many instances of bovine tuberculosis, with which pleuropneumonia was sometimes confounded, and I epitomized the differences at that time, stating that in man the tubercle tends to become caseous: in cattle cretaceous. Besides, the ulcers and cavities of advanced human phthisis occur rarely, if at all, in cattle. The little centers of disease grow by the deposit of cretaceous matter in concentric layers until the pulmonary lobule is distended to many times its normal size, eventually forming a yellow tumor of stony hardness. The interlobular tissue also is filled with little tumors, usually pedunculated, that vary much in size. The visceral and parietal layers of the pleuræ are also covered with similar tumors, which form grape-like clusters, known as "grapes" or "angleberries." In 1896 Theobald Smith[2] noted also a difference in the two bacilli. That the pathological lesions of bovine tuberculosis are quite unlike those of the human variety is therefore apparent. These are but examples of the differences between the diseases of mankind and the lower animals, called by the same name.

In pursuing this matter further we find that susceptibility is a relative, instead of an absolute term. It may mean merely that a small rather than a large dose is necessary to produce infection. Susceptibility may be inherent in an individual, in races, or in genera. We all know that some persons will not contract malarial poisoning and that colored people are refractory to yellow fever. But pigs are not susceptible to tuberculosis, while the guinea-pig is easily infected. In the same way immunity is a relative rather than an abstract term.

Three varieties of susceptibility are recognized, a natural, acquired and an inherited. The natural susceptibility of some animals is very great. For instance, mice and guinea-pigs are peculiarly susceptible to anthrax poison. We also know from experiments that certain persons will contract almost any infective disease to which they are exposed, while others under similar conditions will escape. This disposition may be inherited in a given case, though it may not be natural for the species. Some of the protective influences we know. Age is one. During the first years of life there is little disposition to infection, but from that period on until puberty the tendency increases gradually. As old age approaches, there is a somewhat progressively decreasing disposition to infection. Similar conditions are observed in the lower animals. In animals deprived of food or drink the susceptibility is increased. Improper or unaccustomed food, sudden changes of temperature, shock, spasms, fatigue, exhaustion, worry, are closely related to the causal production of infection. The final disease, or, as it is now called, the *terminal* affection, so commonly the cause of death in chronic non-infective diseases, is apt from these causes to be infective, and for this reason. Assuming in a given case tuberculosis to be the terminal affection, it may have remained latent for an indefinite term, until the shock of an operation, exhaustion following parturition, or some wasting or chronic disease has broken down the individual's susceptibility, when the tuberculosis takes on an acute form and carries him off.

I have now to speak of acquired and inherited immunity. There are two forms of acquired immunity, the active and the passive; and they are of great interest to us of the present time. Active immunity is best described by what it accomplishes. For example, the attack of an infective disease produces active immunity for a variable period. So do small doses of virulent cultures; large doses of cultures attenuated in various ways; injections of bacterial products as employed by Haffkine for prophylactics against plague; and injections of the sterilized products of the bacillus. This latter method has been employed with some success in tetanus and diphtheria.

At first small doses of the toxin are used, and the amount is gradually increased until immunity is accomplished. An animal may be so immunized that it will not react to a dose 100 times the amount necessary to kill the animal before inoculation began.

This method is used in conjunction with the inoculation of living and virulent cultures in the preparation of the antidiphtheritic sera taken from horses.

Passive immunity is produced by antitoxins. Salmon and Smith of Washington were the pioneers in this movement,[1] as I have already said. Experimenting on pigeons with the filtrates from cultures containing the products of the hog cholera bacillus, they found that

[1] "Considerations on the Origin and Natural History of Tuberculosis." Medical Record, October 28, 1882.
[2] Journal of Experimental Medicine, Vol. III, p. 451.

[1] Smith, Procedures of the Biol. Soc. of Washington, Vol. III p. 29, 1884–1886.

pigeons were made immune to the bacillus which produced the disease in ordinary pigeons. Behring followed by devising a plan for preparing the antitoxin. The bacilli are first cultivated in bouillon, and then the cultures are freed from bacilli by filtration. The filtrate containing the toxin is then injected into horses, in successively increasing doses. After large quantities of the serum have been injected, the horse, becomes immunized. In the serum of his blood is the antitoxin. Of course some modifications of this method are in use, but in the main it is carried out in the manner stated.

In passive immunity the individual inoculated with the antitoxin shares the immunity *passively* with the animal from whom the antitoxin is drawn. It is the condition produced by serum therapy. The antitoxin is both prophylactic and curative, but the dose required for a cure is much larger than for prevention. Passive immunity can be produced quickly; active immunity requires time, but has a more enduring quality than the passive form.

Inherited susceptibility is perfectly comprehensible, just as any other quality transmitted from a parent. Inherited immunity has been shown experimentally in anthrax and tetanus. On the supposition that the mother has been actively or passively immunized, the offspring may partake of her immunity; or enjoy a natural immunity handed down by either parent.

We are at all times beset by infective bacteria. They are in the air we breathe, the water we drink and the food we eat, but if the amount is *subminimal,* that is, below the toxic dose, we are not poisoned. If the dose is maximal, infection may easily take place. An instance of this kind recently came under my observation. A father and mother with four children living in a tenement house, in four small rooms, with only two windows, were all prostated at one time by epidemic influenza, while other families in the tenement were not affected. The poison in this case was present in maximal quantities. The site of the inoculation is also a controlling factor. Some parts are less resistant than others. A part of the body that is in a normal condition may be successfully inoculated, while a similar part in a state of inflammation may be refractory. We have already seen that the virulence of a pathogenic organism may be raised or lowered by artificial means. We may produce a pure culture or attenuate it.

Specific infection, however, is apparently diminished or intensified by microorganisms other than the pathogenetic ones.

Thus tetanus is possibly dependent to some extent on the microorganisms associated with the specific. On the other hand, if the bacillus of anthrax is inoculated together with the bacillus of erysipelas, the attacks of anthrax will be mild as compared with an attack where the anthrax bacillus alone had been inoculated. So in diphtheria, the association of staphylococci or streptococci with the bacilli of diphtheria is apt to modify the course of the disease. These are examples of what is known as *mixed infection.* To render an animal immune there is another method besides that of neutralizing the toxin by antitoxin. It is by the use of *bactericides.* When microorganisms alone are used for producing immunity, the serum develops marked antibacterial powers, while it has little or no effect on the toxins elaborated. On the other hand when the filtered cultures (toxins) are used, the serum develops both antitoxic and bacteriolytic properties.[1] It is apparent therefore that the sera prepared by these two methods are not identical. These principles are recognized in the manufacture of the various specific sera, such as the antidiphtheritic serum, antiplague serum, etc., and both bacteria and their toxins are, as a matter of routine, injected into the donating animal, though in antivenin (snake poison), bacteria are obviously not necessary. And so most sera used in the treatment of disease have both antitoxic and antibacterial powers. This is important, for as a *curative* remedy, an attack is made not only on the bacteria that make the toxins, but on the toxins which produce the disease. But from a prophylactic point of view, it is sufficient that a serum has *bactericidal* properties.

A curative serum, therefore, is necessarily a protective. As there is a great variation in the amount of serum required in a given case, it has been necessary to standardize the serum to make it effective. The method of Ehrlich is now generally used. This is his method—First of all the least amount of diphtheritic toxin which is requisite to kill a guinea-pig (weighing say 250 to 300 grams) in 3 to 5 days is determined. Then an estimate is made of the exact amount of antidiphtheritic serum that is required to neutralize 100 of the above toxins. This constitutes the *unit.* Now, this unit may vary in size, but the more potent the serum the less the quantity required in an injection. Therefore to make this quantity as small as possible, or, in other words, to diminish the size of the units, the antitoxic value of the serum is raised as far as practicable by injecting the horse as many times as possible.

As already intimated the animal body has the power to produce certain substances that will defend it against all sorts of alien cells and their products. But the nature of these substances is unknown. And yet we know that they are able to neutralize poisons, agglutinate cells, cause precipitation and coagulation, etc. These antibodies are classed as antitoxins, agglutinates, precipitates, coagulins, etc. Those that destroy cells are classed as cytolysins, and this includes the bacteriolysins (bactericides), and the hemolysins, which destroy the red blood corpuscles. There are also a number of other destructive substances known generically as lysins, but having specific powers. Such anti-substances are produced by

[1] In bacteriolysis the bacteria are dissolved, in hemolysis the red blood corpuscles are dissolved. In leucolysis, the white corpuscles are dissolved.

the repeated inoculations of an animal with small doses of the substances against which it is desired to obtain the anti-substance. By this process, however, more than one anti-body can be formed. For example, repeated inoculations of a rabbit with typhoid bacilli cause the rabbit's serum to have not only bacteriolytic, but also agglutinic properties. The substance that causes agglutination was discovered by Pfeiffer[1] who found that if mobile cholera organisms were introduced into the peritoneal cavity of guinea-pigs immunized against cholera they would become motionless, adhere together ("clump"), become granular and eventually disappear; but he also found that similar "clumpings" would take place when typhoid bacilli were injected into an animal immunized against typhoid fever. Bordet[2] simplified the procedure when he discovered that "clumping" could be produced in a test tube, if the immunized serum were added to a broth culture of the microorganism. In the test tube, however, no granules were found in the bacteria, nor did they disappear. In fact, after some hours, usually about twenty-four, the clumps broke down, the bacteria resumed their activity and began to multiply. In Pfeiffer's method, therefore, the serum is agglutinative, and also bacteriolytic; in Bordet's it is only agglutinative.

The discovery of "clumping" or agglutination has been of the greatest value, and forms the basis of the Widal test in typhoid fever. It is true it may be found, to some extent, in normal sera, and other organisms besides those of Asiatic cholera and typhoid fever will agglutinate, but the phenomenon is so imperfectly marked that it has not been regarded as seriously affecting the value of the Widal test.

The Widal reaction, as is well known, is as follows: if equal parts of a serum and of a solution containing typhoid bacilli are mixed together, it will be found in a large number of instances that agglutination takes place, no matter what kind of serum is used, and this agglutination will continue for hours. But if the serum is greatly diluted and the time limit fixed at an hour, the typhoid bacilli will be agglutinated only by serum derived from an individual in whom typhoid bacilli have been growing.

In the Widal method, serum from the suspected patient is mixed in various degrees of dilution with a cultivation of proved typhoid bacilli, and the time limit is fixed at one hour. If agglutination is marked within that time in a dilution of 1 to 50 or more, the reaction is said to be present. The greater the dilution the serum will stand before its agglutinating powers are lost, the greater the certainty of typhoid fever. In human patients agglutination will often occur when the dilution is 1 to 100 of serum.

But after all, this determination of the specific character of a disease by the agglutinating process has its limits.

For example, there are some sorts of the colon bacillus that will agglutinate in high dilutions. Blood serum also in jaundice often agglutinates typhoid bacilli in high dilutions, but this may be explained from the fact that cholangitis is often due to typhoid bacilli. Again, the reaction to this test may continue for many years. These facts should be taken into consideration in our valuation of the Widal test.

The following theories of immunity are the most important,—*The Exhaustion Theory*[1] holds that when an infective disease has exhausted the "pabulum" on which the disease feeds, there is immunity.

The Retention Theory holds that acquired immunity is due to storage in the body of bacterial products which prevent the growth of that variety of bacteria that produced them.

The Phagocytic Theory of Metchnikoff was and is based on the theory that the cells of the animal kingdom protect themselves from invading cells by devouring them (phagocytosis). Accordingly immunity from a disease means that the phagocytes of the infected animal are able to devour the attacking bacteria. Susceptibility implies that the invading bacteria are able to overcome the phagocytes. Phagocytosis is really a phenomenon of the animal kingdom that is generally recognized, hence analogically there is a basis for it. According to Metchnikoff the leucocytes and endothelial cells are to be classed among the phagocytes. This theory has been successfully attacked, however. In the first place, in many infective diseases, bacteria are not eaten up. Indeed, bacteria may, as in gonorrhea, survive the cells that have swallowed them. In fact the cells are often attacked by bacteria, rather than the converse. Besides, the so-called phagocytes may actually help to spread the disease by carrying the bacteria to remote parts of the body. This theory has, therefore, no universal application, though partly true.

The Humoral Theory propounded by Fodor[2] holds that bactericidal properties exist in many fresh specimens of blood serum, and that the anti-bodies,[3] known also as defensive substances or alexins are of a chemical nature; and that they induce immunity. There is no proof, however, that they have a chemical nature. Besides it is pretty certain that cells have something to do with infection.

The *Cellulo-Humoral Theory* has aimed to unite the theories of the phagocytic and the humoral schools, in other words, the French and the German.

Both cells and fluids are concerned in natural and artificial immunity. Immunity is due, not only to substances related to the blood of the immun-

[1] Pfeiffer, Zeitschr. f. Hyg., Vol. XXI, 1896.
[2] "Toxins and Antitoxins." Annales de l'Ins. de Pasteur, Vol. XVII, 1903.

[1] Theories are stated as they were originally propounded.
[2] Fodor, Deutsch. med. Woch., 1887, p. 745.
[3] According to Buchner and Hankin these anti-substances are proteids. They are called sozins, if present in the normal serum; phylaxins, if the result of immunization. Sozins destroy both blood cells and bacteria, and are themselves destroyed by a temp. of 131° F. If they successfully oppose the bacteria, they are called mycosozins, if the toxins, they are called toxo-sozins. The phylaxins, or true antitoxins destroy neither blood cells nor bacteria, and retain their properties after exposure to 176° F. If the true antitoxin counteract the bacteria, they are called mycophylaxins; if the toxins, they are called toxophylaxins.

ized animal, but also to its tissues and juices. These substances are formed by the cells of the body during exposure to the toxins, and for a while afterward. But they are not formed by any one variety of cell, but more or less by all the cells of the body.

These protective substances meet and resist the bacteria and their toxins. Stimulated by the bacteria, they produce anti-bacterial substances, while the toxins stimulate the same cells to produce antitoxins.

Ehrlich's Side-Chain Theory was promulgated in 1897, and is the most recent of the methods by which an effort is made to utilize established facts to explain the process. The fundamental idea of Ehrlich is that the protoplasmic body, or the cell (in other words) is a complex structure, consisting of a central body with lateral processes (side chains he calls them), that are capable of combining with or being replaced by other bodies.

This idea is based on an analogous condition recognized in organic chemistry, which is used to explain the relations of iso-meric compounds. Ehrlich holds that the cell (protoplasmic body) is capable of forming a vast number of these processes or side chains, and that a separate process can be formed for every blood or cell poison that exists. These processes he calls *receptors*. Each receptor is capable of dealing with a single body, whatever its character or chemical composition, whether solid or fluid; but it has a double function, one of attaching itself to a protoplasmic molecule and the other of inoculating the cell.

The fixing agent is called the *Haptophor* (anchoring agent); the inoculating, the *Toxiphor*.

If the poison is very virulent the cell is destroyed, and if many cells are damaged, the animal may die. If however, the animal survives, the damage done to the cell process (receptor) calls for a new formation of processes similar to those that have been injured. Now, the reproduction of cells to compensate for loss is a recognized pathological principle. Accordingly he assumes that a proper stimulus imparted to a cell will lead to an overproduction to compensate for the loss of substance, while a number of the receptors would be thrown off into the blood and lymph. *These cast off receptors* would then be the antitoxins.

In passive immunity we have to consider some problems involving bacteria that do not to any marked extent produce soluble toxins, samples of which are the bacteria of cholera and typhoid fever. When these microorganisms are destroyed by the serum of an immunized animal it is supposed that their disintegration is due to the co-operation of two substances, an intermediary (or immune body)[1] and a complement,[2] because the normal serum which contains only the complement has no effect on the bacteria.

[1] The complement is an unstable body destroyed at a temperature of about 130° F., and known also as an alexin, defensive substance, ferment, cytase.

[2] Also known as amboceptor, sensitizer, desmon, copula, phytase, etc.

The immune body resists heat, the complement is destroyed by it, but the two must be conjoined so as to produce destruction of the bacteria (bacteriolysis).

Immune bodies may possibly be derived from the cells of immune animals. They vary according to the specific organism. There may be various kinds of immune bodies and complements. Disintegration of bacteria by blood sera also, is largely dependent, it is thought, on the joint action of the complements and intermediary bodies.

In discussing the subject of passive immunity, however, we are brought face to face, not only with a question difficult in itself and very largely theoretical, but complicated by the use of many new terms that are not in general use.

Add to these facts that many of them are synonymous, while the same word may have different significations with different writers, it is clear that the subject has passed beyond the bounds of intelligent discussion, at least so far as many of us are concerned.

It would not be profitable, therefore, to undertake any extended discussion of this subject at the present time, even if the limits of this paper admitted it. It is sufficient to say in conclusion that, according to Ehrlich's theory, if immunity has been *acquired*, his explanation is as follows: The receptors circulating in the blood anchor any of the corresponding toxin molecules before they can reach the cells. And in passive immunity the serum of the immunized individual injected into another individual supplies him with these receptors, and thus confers on him protection against infection.

So far as the clinical side of the attack is concerned, incubation would include both the period when the toxin molecules are grasping the receptors of the cells and also the period during which the toxiphoric agency is acting (the stage of invasion). When the antitoxin formation begins to be established the disease is beginning to yield; where it gains the upper hand, convalescence is at hand.

Now as to the question of *Natural Immunity*. According to Ehrlich either the cells are developing so many receptors that there are always enough in the blood to anchor any toxins or molecules and prevent them attacking the cells, or the cells may have no receptors (processes) fit to grasp the toxin-haptophors. Besides, there must be the right kind of receptors and the right kind of haptophors, and they must be capable of adapting themselves to one another as keys and locks. Thus, for example, the toxins of tetanus tend to affect only the cells of the nervous system.

Ehrlich's theory has of course met opposition, and it will doubtless be modified to meet reasonable objections. But it is convenient for us to accept it provisionally as a good working hypothesis that will be helpful in discovering the principles that govern immunity, whatever they may be.

Latency in Infective Disease.—Latency in dis-

ease has long been recognized. Several explanations are offered. The infecting agent must have been all the time in the system, manufacturing toxins, though not in sufficient amount or quantity to insure symptoms; or the microorganisms may have been in the body in an inert condition, that is, incapable for a time at least of active development.

Now, the latter condition actually prevails in nature. For example, in febrine, a silkworm disease, the pathogenetic microorganism can actually be seen in the eggs. But they do not develop until the growth of the caterpillar begins. In the germ stage of the caterpillar they are quiescent (Lazarus-Barlow).

A relapse, as in typhoid or malaria, is really a fresh access of the disease. How then can we explain these attacks at a time when the patients are presumed to have acquired a certain degree of immunity? So far as typhoid is concerned the explanation may be that the typhoid germs were temporarily locked up.

Thus, in typhoid fever Chiari found of 22 cases taken consecutively, that there were typhoid bacilli in the gall-bladder in 19, and in 13 of these cases the gall-bladder showed hyperemia, edema and infiltration of its walls.

Hence typhoid bacilli must have been locked up, and multiplying have formed these toxins, which could not be discharged owing to the inflammation of the ducts. With the patency of the passages they were discharged into the intestine in such numbers and perhaps endowed with such unusual virulence that they broke down the immunity that was being developed in the cellular tissues.

Now, just such a condition sometimes prevails in the horse when he is being immunized against diphtheria. For an excessive dose either of a toxin or of bacteria, can actually lead to symptoms of the very disease against which the animal was being prepared, notwithstanding he had already attained a fairly high degree of immunity.

In prosecuting the study of these subjects, much has been done, but only by protracted investigations of the most elaborate and painstaking character, while much more remains to be done in the future.

This work, however, can only be done by experts, educated and trained to laboratory methods, and conversant with all the facts and theories that are afloat, and also with the use and misuse of the many self-coined words that investigators have thought necessary to use in expressing their ideas.

And yet it is none the less true, that out of all the present obscurity, facts of great practical importance are being gradually secured.

Already therapeutic principles that have saved countless lives have been established by these researches. But they should be prosecuted with more vigor. In fact, medicine offers the modern philanthropist no larger opportunities, than the prosecution of these subjects by trained men, provided with all the appliances necessary for scientific investigations.

NOTES ON THE EPIDEMIC OF CEREBROSPINAL MENINGITIS.[1][2]

BY HENRY DWIGHT CHAPIN, M.D.,
OF NEW YORK.

EARLY in March of this year, cerebrospinal meningitis, which is endemic in this city, began to increase in the number of those attacked. A glance at the deaths reported from this disease last year in comparison with those reported during the same months of this year shows such a marked increase as to justify us in considering it epidemic. The figures here quoted were kindly furnished by the Health Department.

Deaths from Cerebrospinal Meningitis.—

During	week	ending	March	19,	1903....	6	1904....	16
"	"	"	"	26,	"	7	"	13
"	"	"	April	2,	"	5	"	31
"	"	"	"	9,	"	9	"	29
"	"	"	"	16,	"	5	"	45
"	"	"	"	23,	"	5	"	55
"	"	"	"	30,	"	7	"	70
"	"	"	May	7,	"	6	"	76
"	"	"	"	14,	"	4	"	94
"	"	"	"	21,	"	10	"	69

In the limits of the short paper requested by the President, only a few of the salient points can here be enumerated. It is difficult to briefly draw a clinical picture of a disease so marked by irregularity in its manifestations, but an attempt will be made from a study of cases seen by the author and those reported by colleagues in the various societies. The onset is fairly abrupt, differing markedly in this respect from all other forms of meningitis. In getting a history it is usually possible to date the time of the beginning of symptoms to within a few hours, or even within sharper limits, before which time the patient has been apparently in good health. Generally there is vomiting, chilliness and rigors in older subjects, and frequently severe convulsions. The severity of the initial symptoms is apt to stand in some relation to the type of the attack. Thus prolonged convulsions quickly followed by coma will warrant a grave prognosis. There are exceptions, however, to this rule, as exemplified in a child of 2½ years, recently seen, who had convulsions at the onset lasting, off and on, for four days, and yet she made a good recovery in between two and three weeks. If stupor or coma quickly follow the convulsions, the case will be apt to be severe. In patients old enough to describe symptoms, complaint is made of severe pain in the head and back of the neck. The typical retraction of the head is an early symptom, usually noted on the second or third day. In very mild cases, this may not be so marked, but in average and severe cases, the rigidity is often extreme and hard to overcome. The posture of the patient at this time becomes characteristic, and, with the opisthotonos, the thighs and legs, and even the arms and hands, are apt to be in a condition of more or less extreme flexion. The contraction and rigidity usually continue during the course of the disease. After this characteristic beginning, cerebrospinal meningitis is most

[1] Read before the Medical Society of the County of New York, May 23, 1904.
[2] Received for publication, May 25, 1904.

irregular in its manifestations, particularly in the epidemic type. Cases that appear to be rapidly proceeding to a fatal ending may suddenly improve, and those that do not show very urgent symptoms may just as suddenly and unexpectedly die. A glance at some of the clinical features noted during the course of the disease as here given has been taken largely from cases studied in the children's ward of the Post-Graduate Hospital, with the kind permission of Dr. Caille, who is at present on duty. With reference to the nervous system, convulsions may first be noted. As already stated, the clonic spasms occur early in the disease, but they may be severe and persistent. In one case a baby of three months had repeated convulsions covering a period of five days, and in a case previously mentioned this alarming symptom lasted four days. It is unusual to have convulsions later in the disease. The tonic spasm of the muscular group at the back of the neck is one of the most constant features, with little or no relaxation until late in the disease. Hyperesthesia of the skin is noted, as in all forms of meningitis. The patients show every evidence of discomfort on being disturbed, partly from this cause and partly from aggravation of the pain in the head and neck. The mental state runs the gamut from apathy and indifference to great irritability, delirium, drowsiness, semi-stupor, stupor and coma. Some of the cases went directly from convulsions into stupor and this is very apt to take place. Kernig's sign may be recognized in nearly every case. All of the cases in which the blood was examined exhibited more or less leucocytosis.

The temperature and pulse show remarkable variations and present no characteristic features aside from this variability. There is no apparent cause for these wide fluctuations. One case, a child 3½ years old, is worth special mention. On one occasion the temperature rose to 108.6° F., once to 106.4° F., and three times it was above 105° F. The pulse varied from 100 to 160 and the respiration from 24 to 48. There was initial vomiting, followed by irritability, rigidity of the neck and then marked apathy. An ounce of turbid fluid was withdrawn by lumbar puncture and the *Diplococcus intracellularis* found. Leucocyte count, 21,200. Dr. Davis found neuroretinitis in both eyes. The child is now convalescing favorably. Another case, 6½ years old, had a temperature of 106° F. and 107° F. on the second and third days respectively, after which it gradually dropped to 99° F., the pulse varying from 150 to 85 and the respiration from 44 to 24. An ounce and a half of turbid serum removed by lumbar puncture and *Diplococcus intracellularis* found. Eyes normal. This case has so far done well. Another case, 3½ years old, started with vomiting and convulsions, followed by delirium. During fifteen days the temperature varied between 103.2° F. and 98.6° F., when it rose to 106.4° F. and the child became much worse. As he was apparently dying, the parents wished him removed to his home. Lumbar puncture dry. Mild neuroretinitis of both eyes with dilatation of blood vessels.

While the temperature is thus most irregular and may reach an extraordinary height, some cases may run their course with little increase of temperature. The pulse, while variable, is not apt to exhibit the marked intermissions so frequently seen in other forms of meningitis. The respiration likewise differs from ordinary meningitis in not usually being so irregular and sighing.

In previous epidemics there have been cases of croupous pneumonia reported as occurring during the time that cerebrospinal meningitis was prevalent. The frequency, severity and mortality of pneumonia during the past winter and spring have been noted by all physicians in this locality, thus corroborating previous experience in this respect. The skin seems seldom to be involved in the present epidemic. No case has been seen by the author exhibiting the purpuric spots over the body, from which the old name "spotted fever" was derived. In conversing with others who are seeing cases, the rarity of the eruption has been likewise noted. The eyes are often more or less involved, with dilatation or inequality of the pupils and sluggish response to light. In four cases seen by the author there was a mild neuroretinitis of both eyes and in one case dilatation of the retinal veins on both sides was reported. It is possible for all the structures of the eye to become inflamed, with consequent loss of sight. Some cases exhibit a mild grade of conjunctivitis. The ear is likewise involved in a certain proportion of cases. A subacute inflammation may take the form of an otitis media or an involvement of the labyrinth, followed by deafness.

The general course and duration are most irregular. A mild case may go on to recovery in two weeks, while severer ones last many weeks and even months. The patient may get in a condition of extreme prostration and emaciation and yet gradually go on to recovery. Unfortunately there are cases where the brain is permanently crippled by the ravages of the disease and the patient never regains his former mental and physical strength. The special senses may likewise suffer loss or permanent disability.

The cause of the epidemic form of cerebrospinal meningitis is recognized to be the *Diplococcus intracellularis*, which is found in the fluid procured by lumbar puncture. This fluid is usually turbid when drawn. The diplococcus was found in all the cases thus examined except two, one of the latter giving a dry puncture and the other a clear fluid, the culture from which gave no growth. The manner in which this germ gains access to the cerebrospinal meninges as well as its port of entry appears to be uncertain. The nasal secretions are now being studied, the results of which will doubtless be given in due time by the bacteriologists. In one case, a baby of three months, some turbid serum drawn from the spinal canal showed the diplococcus and an eye-smear was reported to exhibit gonococci or the diplococcus of meningitis. As the eyes were

normal to examination, the latter was evidently the germ recognized. Several mild cases have only been recognized positively as cerebrospinal meningitis by the results of the lumbar puncture. In one case, a young infant, with an obscure history, was admitted to the hospital and, after an examination, there was a question as to diagnosis, as there were no characteristic symptoms present. A lumbar puncture was then performed and the diplococcus found, in the absence of which no positive diagnosis would have been made. Doubtless in this epidemic, as in preceding ones, some mild cases are never correctly diagnosed, especially in young infants. There are no means of knowing how many such cases occur, hence it is very difficult in this as in other epidemics to state the relative mortality of the attacks in different years. We know, however, that the death rate is high. In the epidemic of 1872, 782 deaths were reported during the year in New York, and in 1881, 461 deaths. This included only what now forms the Borough of Manhattan, with a population then much smaller. The disease does not seem to be limited to any one section of the city, but, generally, it occurs in the poorer quarters. It seems to attack by preference those living in unfavorable hygienic surroundings, or those whose systems are exhausted, especially if they live in a depressing environment. While the spread of this disease is certainly a calamity, there does not seem to be occasion for undue alarm in the public mind. The Department of Health is studying the epidemic and doing all in its power under the conditions to find out how the disease extends and acts. It does not behave like a contagious disease that spreads from one adjacent point to another, frequently being traced by transportation, but rather appearing in comparatively isolated localities. Most of the epidemics in this country and Europe have extended principally in winter, so that, reasoning by analogy, the onset of warm weather should have a favorable effect in checking the epidemic's influence.

THE CLINICAL FEATURES OF CEREBROSPINAL MENINGITIS, OR CEREBROSPINAL FEVER OF THE EPIDEMIC TYPE.[1] [2]

BY HENRY KOPLIK, M.D.,
OF NEW YORK.

DURING the past few years additional interest has been given to the study of cerebrospinal meningitis of the epidemic form, due mainly to the investigations, on this side of the Atlantic, of Councilman and his pupils, Osler and others. A severe epidemic of this disease in Boston (somewhat over a hundred cases) has given Councilman an opportunity to study thoroughly the disease from an epidemiological as well as from a pathological standpoint. Osler has been able to study a number of cases occurring in an outbreak in Baltimore.

During the past five years there have been yearly outbreaks of this disease in New York, culminating in an extensive epidemic in the spring of this year. I have thus been able to study quite a number, some 37 cases, of the disease at the bedside, and to analyze carefully its clinical features. In this study I have utilized 77 cases of meningitis occurring in my service in the Mount Sinai Hospital, New York. These 77 cases were divided into the following groups: 37 cases of cerebrospinal meningitis of the epidemic type—21 of which were substantiated by culture and coverglass spread to be due to the *Meningococcus intracellularis*. Of the remaining cases of the epidemic form, some were not substantiated by lumbar puncture being clinically self-evident; others were so-called dry taps; 35 cases were of the tuberculous form of meningitis, as substantiated absolutely either by post mortem or guinea-pig experiment, or by discovery of tubercle bacilli in the lumbar puncture fluids. One case was a so-called staphylococcus meningitis; one case, primary pneumococcus meningitis; one case, streptococcus meningitis. In two cases, so-called pseudo influenza bacilli were found.

In the above statistics I have not utilized 15 cases of cerebrospinal meningitis which belong to the epidemic of the present year. Of these 15 cases, 5 died; of the remaining 10, 5 are still in my ward convalescing. Some of these cases were so classical and self-evident, or the symptoms improved so steadily that they were not subjected to lumbar puncture. The ultimate fate of the remaining cases cannot be stated as yet.

Age.—The ages of the patients affected with epidemic cerebrospinal meningitis confirm the assertion that this affection is a disease of young people. Sixty per cent. of the cases were under two years of age; the youngest was four months of age; 77 per cent. of the cases were under four years of age, the oldest child being fourteen years. The average age was two years. In tuberculous meningitis, however, the average age was somewhat higher, only 41 per cent. of the cases being under four years of age, the average age being four years and four months.

Classification.—In looking over the literature on the subject of meningitis, the most lucid classification is given by Osler. He divides the classification into primary and secondary forms, which will be accepted by all. The primary forms include cerebrospinal fever, both of the sporadic and the epidemic types, and as a separate disease the pneumococcus meningitis. In the secondary forms he includes the tuberculous, the pneumococcus meningitis; the latter being secondary to pneumonia, endocarditis, disease or injury of the cranial bones. Third, there are the pyogenic forms, due to staphylococci, the streptococci, or secondary either to disease of the cranium or local infections. Fourth, are met the forms secondary to typhoid fever, influenza, diphtheria, gonorrhea, anthrax, actinomycosis. Fifth, Osler would include in a separate rubric the so-called serous meningitis, which I may say is to-day being

[1] Read before the Association of American Physicians, Washington, D. C., May 10, 1904.
[2] Received for publication May 18, 1904.

recognized as a secondary form of the disease, due possibly to infection by streptococci or pyogenic organisms. This classification, it will be seen, recognizes both the sporadic and the epidemic forms of cerebrospinal fever as being the same disease and due to the same essential cause.

My own cases are of the primary form of cerebrospinal fever of the epidemic type, including at least one form which may occur sporadically, the so-called posterior basic meningitis of Still.

Bacteriology.—The bacteriological features of my cases were worked out in the laboratory of the Mount Sinai Hospital, under the supervision of the pathological staff. Referring to a report of this work, by E. Libman, published in the Mount Sinai Hospital Reports of this year, it will be seen that all the cases were examined culturally. Reliance was not placed on cover-glass stain alone. All the cultures corresponded to those described by Weichselbaum. None of them, however, showed Gram positive diplococci. There was a variation in the growth on media not containing serum; but when this growth was obtained on such media, it was never profuse.

The conclusion is that there is one type of the *Diplococcus meningitidis* in the New York cases of cerebrospinal meningitis. This type corresponds to that found by Councilman and Wright in Boston; and Osler and Hirsch in Baltimore, and Herrick and others in Chicago. Both the nasal discharges and the conjunctival secretions were studied and in one of my cases the presence of the meningococcus was proven to be present culturally in the conjunctival inflammatory discharge. In this case there was a distinct history of conjunctivitis preceding the attack of meningitis, and the diplococcus was also established in the cerebrospinal fluid. We have never proven the presence of the meningococcus in the secretions and discharges of the nose. We have found, however, the *Micrococcus catarrhalis,* an organism which closely resembles the meningococcus, whose cultural characteristics we will not enter into, but refer the reader to the extensive investigations of this organism by Dr. Celler, my former assistant, and published in the Mount Sinai Hospital Reports of this year.

Clinical Types.—The clinical picture presented by children suffering with cerebrospinal meningitis of the epidemic type is quite characteristic, not only in its onset but in the general course of the disease. I have been able to differentiate certain distinct types in the cases occurring in my hospital service and consulting practice. Previous to the present epidemic in New York, the malignant cases during the past four years have not been as common as they were during the present year. I have recently seen a number of cases presenting the malignant form in which children in previous good health are attacked with the disease, and die within twenty-four or thirty-six hours.

The following case, one of the first of this year's epidemic, is quite a characteristic example of this type of the disease: An infant twelve months old, nursed at the breast, perfectly formed, a large, healthy, bright child, never previously affected by any illness; nursing and bowels normal. On the morning previous to the day on which I saw the case with the family physician, the child appeared sleepy, stupid and refused the breast. It vomited, but was not feverish. That evening the physician was called in and found the infant quite drowsy and listless, with a temperature of 103° F., pulse 110 and very weak. There was no peculiarity about the eyes, no stiffness of the muscles of the neck or body. At 3 and 5 A.M., on the following day the child awoke crying and the mother discovered some red spots on the cheeks. The face was slightly swollen, the eyes staring, and the child was apparently blind. By 8 A.M., the entire face, hands and body were covered with blotches which turned bluish; the tissues of the extremities seemed to be hard and swollen; the buttocks and body looked as if the child had been beaten, ecchymosis being quite extended over the body and extremities when I saw the child. At this time the temperature was 101° F. and the pulse very weak, scarcely to be felt at the wrist; the lips were blue; the reflexes abolished. When I saw the child she had no rigidity of the muscles of the neck; there was no Kernig symptom; the pupils were uneven and did not react; there was a slight conjunctivitis; an examination of the lungs, abdomen and ears gave a negative result. The breathing was irregular and catchy, the pulse very rapid and scarcely to be felt at the wrist. The diagnosis of cerebrospinal meningitis was confirmed by a lumbar puncture, made post mortem, a cloudy fluid, milky in color, being drawn off, and the intracellular diplococcus of Weichselbaum being found in the fluid, both by stain and culture.

Since seeing this case, I have seen at least three others, each presenting similar features. In two of these rapidly fatal malignant cases the hemorrhages thus mentioned were preceded by an erythematous rash.

Another type of cerebrospinal meningitis is more commonly met with in which a child in apparent health is suddenly taken with dizziness or vertigo, vomiting follows, accompanied by severe headache, and then the child passes through the different phases of the disease which are well known and described in books on the subject.

A more puzzling type of cerebrospinal meningitis in infants and young children is that in which a child in apparent health is suddenly found to have a temperature, is restless, refuses the breast, vomits once or twice, and then for weeks will run an intermittent type of temperature, as high as 104° or 105° F., falling to the normal or subnormal daily. In the intervals of freedom from temperature the children or infants will play, and then when the temperature rises they may complain of slight headache, become drowsy, irritable and refuse nourishment. In these cases the typical signs of meningitis are not always present. The delirium may not be constant or may not

extend over the twenty-four hours. The rigidity at the back of the neck may not be very marked, especially in young infants. In these cases also, the children may not have a marked Kernig symptom, especially if below two years of age. The most characteristic feature about these cases it seems, is the prolonged period of temperature of an intermittent type closely resembling malaria. In fact, the attending physician in many of these cases has examined the blood for the malarial plasmodium; or attention has been drawn by the intermittent type of the temperature to the ears in the hope that some focus of suppuration would be found. In other words, these infants and children may continue over a period of weeks with this peculiar temperature, and the onset of the disease has not been marked by convulsions or any of the classical symptoms of meningitis; and still a lumbar puncture in these cases will reveal the presence of the intracellular meningococcus in the fluid thus obtained.

In young infants, the type of the disease most commonly met with is that in which the onset is sudden, marked with general convulsions, high fever, vomiting at the outset, the high fever of the intermittent or remittent type, continuing over weeks. After the fever has lasted for some days or weeks, the mother will notice the rigidity of the head, the irritability of the child and the marked emaciation.

The Mode of Onset.—In all the cases that I have had an opportunity to study in hospital service, in which the diagnosis was confirmed, the main characteristic of the onset of the disease was that it was abrupt. Observation has shown that children in apparent health would suddenly be attacked by the symptoms just detailed. In only a small percentage of cases has there been a doubtful history of the sudden onset. In this respect, the disease differs markedly from the meningitis of the tuberculous type, which is of slow onset, and in only a small percentage of cases is such a history doubtful.

Neck Rigidity.—Great stress has been laid by some authors on the presence or absence of neck rigidity. As has been hinted, there are some cases in which rigidity is not present at all times; but if these cases are observed for any length of time, our experience shows that slight or marked rigidity is present at one time or another in all cases of cerebrospinal meningitis. Opisthotonos is present in about 70 per cent. of the cases. In the posterior basic forms, of which we will speak later, the rigidity and opisthotonos is so marked that the child will assume the position seen in tetanus, being perfectly rigid, curved backward, the forearms extended, the fingers clenched in the palms; these are cases which only form a small percentage of the total number seen in an epidemic, and they affect mostly younger infants and children. According to Osler, neck rigidity or opisthotonos was not present in the adult form of primary pneumococcus meningitis. Rigidity was present in my own case of primary pneumococcus meningitis confirmed by autopsy. In our case, not only was rigidity present but also opisthotonos.

Reflexes.—In a majority of cases of epidemic cerebrospinal meningitis, the skin, tendon, and plantar reflexes were present in the early stages of the disease, but were apt to disappear in the rapidly fatal cass, or in moribund cases.

The Babinski Reflex.—Babinski, a French neurologist, described the extension of the great toe on irritation of the plantar surface of the foot as a characteristic sign of disease of the pyramidal tracts or the lateral columns of the cord, and we have studied this sign in the forms of meningitis coming under our notice. We have found that in meningitis of the epidemic cerebrospinal type, it was present in 4 of 25 cases studied. This is in marked contrast to what is found in tuberculous meningitis, in which this reflex was absent in only 6 cases of the 26 in which it was sought. In other words, it was present in 77 per cent. of the cases of the tuberculous form of meningitis, and I regard the presence of this reflex as a valuable addition to the clinical picture of tuberculous meningitis as distinguished from cerebrospinal meningitis of the epidemic type. I can only explain its constancy in tuberculous meningitis by the fact that in these cases there is possibly an invasion, either directly or indirectly, of the pyramidal tracts or the lateral columns of the cord by the disease. The sign is of very little value, however, in children and infants below two years of age, for it may at times be seen in perfectly normal infants, or in those suffering from various affections. This seems also to be the conclusion reached by Morse, of Boston, who contends that the Babinski sign is quite inconstant in its manifestations in infants and children below two years of age.

The Kernig Symptom.—Much has been written about this very interesting symptom, the contraction of the flexor muscles of the lower extremities, as seen in cases of meningitis. I have found that the Kernig symptom is of very little utility in infants and children below two years of age. Of course, in infants, especially under one year, there is a normal tendency toward myotonia. Even superficial observation will show that normal infants are apt to lie with their lower extremities flexed, assuming very much the position of the fetus in utero. In children below two years of age suffering from meningitis, the irritability is so great that it is impossible to come to any conclusion as to the presence or absence of the Kernig symptom. In all the cases of cerebrospinal meningitis of the epidemic type above two years of age, therefore, the Kernig symptom was present. In cases of tuberculous meningitis, its presence was not so constant, being absent in eight cases of 26 in which it was sought. I do not lay too great stress upon the presence of the Kernig as a pathognomonic sign of meningitis. It may be present in cases of which we are accustomed to say that there are cerebral symptoms without meningitis as in typhoid fever or pneumonia.

Hyperesthesia and Mental Irritability.—In the

majority of cases of epidemic cerebrospinal meningitis, after the usual symptoms have set in and the disease is well inaugurated, the children, and even infants, are irritable, refuse to be comforted, start at the least sound in the room, lie mostly on the side, the arms and lower extremities flexed, the body taking the crouching position. Any attempt to disturb the patients is met with resistance. In the present epidemic, although many cases have been exceedingly mild, hyperesthesia of the surface, and irritability of the mind was very marked in all cases. In past epidemics of 21 cases hyperesthesia of the surface was quite marked in fully 62 per cent. of the cases.

In marked contrast to the above is the absence in the tuberculous form of the disease of any reaction or hyperesthesia of the surface. The child lies in a stuporous condition, does not notice its surroundings; whereas in the epidemic cerebrospinal meningitis, when not comatose, the children are alive to their surroundings, or are irritated by some things passing on around them. In the tuberculous forms of meningitis, hyperesthesia was present in only three of 34 cases. In other words, it was absent in 90 per cent. of the cases.

The MacEwen Sign.—MacEwen has pointed out that in children in various forms of meningitis we obtain on percussion a hollow note over the anterior horn of the ventricle. If the head is so held that the anterior frontal or parietal bone may be percussed over the situation of the anterior horn of the ventricle, this note will be produced. That is, if the patient sits upright and the head is inclined to one side, percussion of the inferior frontal or parietal bone will give a tympanitic note.

I have found that in 17 cases of tuberculous meningitis in which this note was sought, that it was present in 11, and it has seemed to me to be exceedingly valuable in making up the clinical picture of the tuberculous forms of meningitis. MacEwen thinks that the note is caused by the presence of fluid, so-called hydrocephalus, in the ventricle. In meningitis of the epidemic cerebrospinal type, however, this note is not obtained in the majority of cases. In 13 studied with this object in view, it was present in only two, showing the difference in this respect between the two forms of meningitis. In other words, if MacEwen is correct, there is very little distention of the ventricle with fluid in the first stages of the disease. In the chronic cases, however, with an increase of fluid in the ventricles and these are the cases in which the note was obtained I have found quite a marked MacEwen present.

Facial Paresis.—As is well known, facial paresis is quite a constant feature of the tuberculous forms of meningitis, and in 35 absolutely substantiated cases of tuberculous meningitis, it was found in 19 early in the disease; and it appeared toward the close in most of the cases. In epidemic cerebrospinal meningitis, however, facial paralysis occurs only in the severest types of the disease where the intracranial pressure to one side or the other, especially at the base, is quite great, and in 21 cases in which it was looked for, facial paralysis, marked or slight, was present in only three cases.

Temperature.—One of the prevailing types of fever in children in the cases we have observed was that of the intermittent type, in which the temperature would be quite high at some time of the day, and normal or subnormal at another. The range of temperature would sometimes be very marked, four, five, six or eight degrees. In one case which I have under observation of the basic form of Still, the temperature reached fully 106° to 106.5° F., falling to normal or subnormal at some time during the day. The temperature curve in epidemic cerebrospinal meningitis cannot be said to be characteristic, and at times will exhibit the wildest irregularities.

The Skin.—In most of my cases I have not been able to find the prevalence of the rashes described by most authors. This is due, possibly, to the fact that in the epidemics I have observed, skin rashes and eruptions were not common. On the other hand, herpes, referring especially to herpes of the lip, is also not very common, and was present in only two of 20 cases. In the adult, however, Osler has found petechiæ, erythematous rash, or herpes, in 13 of his 21 cases. In the epidemic of this spring I have observed a number of cases in which a roseola, closely resembling that seen in typhoid fever, was present. Lately I have seen a number of cases with a profuse petechial rash at the outset of the disease.

Eyes.—Contrary to what is the generally accepted opinion, we have found that expert examination of the fundus revealed no changes in the optic papilla in the majority of our cases of cerebrospinal meningitis, although in some there was dilatation of the veins, or congestion without neuritis. In only one case was there descending neuritis. In a group of 26 cases of meningitis of the tuberculous variety, examined by our expert, Dr. Gruening, some change was found in fully 77 per cent. of the cases. This change consisted either of an optic neuritis or papillitis, or the presence of tubercles in the choroid. In this group of 20 substantiated cases of tuberculous meningitis, 7 showed tubercles in the choroid. It would seem, therefore, that the condition of the fundus, aside from the positive discovery of choroid tubercle, gave us important presumptive evidence of the nature of the meningitis.

The Blood.—Every case of meningitis coming under our observation, including those of the cerebrospinal epidemic type, has been examined with reference to the leucocytosis present. The leucocyte count in all of our cases was made at intervals of three days in the course of the disease. In all of the cases of epidemic cerebrospinal meningitis there was leucocytosis to some extent. The leucocytosis was of the polynuclear type, the leucocytes ranging from 20,000 to 55,000, exceeding 25,000 to the cubic millimeter in fully 55 per cent. of the cases. The lowest leucocyte count in any case was 11,100 to 12,000 to the cubic millimeter.

This corresponds very closely to what was found by Osler to be true of the adult cases. In the tuberculous forms of meningitis in infants and children, we have not always found a so-called leucopenia. On the contrary, in fully 40 per cent. of the cases there was a leucocyte count of 20,000 to 25,000 to the cubic millimeter; and under 20,000 in 60 per cent. of the cases. In no case, however, did the leucocyte count exceed 24,000, except in one case of tuberculous meningitis, in which we obtained a leucocyte count of 32,000. The leucocyte count which has just been mentioned (with the exception of the one last referred to) having been made in 26 substantiated cases of the disease, would seem to be an important feature, if we compare it to what is true of the adult. In Osler's cases of tuberculous meningitis, leucocytosis was absent in only three cases; his highest count (24,333) corresponds so closely to what we have found true of our own cases in infants and children, that we are apt to be led to the conclusion that a higher leucocyte count in tuberculous meningitis is exceptional, and, if higher, would speak more for a meningitis other than tuberculous in any given case.

I have studied the leucocyte counts on both the cured and fatal cases with a view to determining whether any conclusion as to prognosis could be drawn from the results of a leucocyte count. In six cases, which recovered, we had the following results:

Case I.—Six years of age; observed from the fourth to the eighteenth day of the disease; leucocytes, 16,800 to 24,000. Puncture fluid clear.

Case II.—Twenty months of age; observed from the fifth to the fortieth day; leucocytes 15,000 to 45,000, the latter toward the twenty-first day of the disease. Puncture fluid clear.

Case III.—Four and one-half years of age; observed from the fifteenth to the eighty-fifth day of the disease; leucocytes, 15,000 at the outset, 34,000 at the midperiod, 21,000 in the convalescence. Puncture fluid turbid.

Case IV.—Five months of age; leucocytes 20,000 to 22,000. Puncture fluid clear.

Case V.—One year of age; observed from the fifth to the fiftieth day; leucocytes, 14,000 to 28,000, the latter in the midperiod of the disease; 15,000 toward convalescence. Puncture fluid clear.

Case VI.—Two years of age, admitted on the fourth day of the disease with a leucocyte count of 40,000. Puncture fluid clear.

Taking a like number of fatal cases, we had the following counts:

Case I.—Four months of age; observed from the twelfth to thirty-seventh day of the disease; leucocyte count from 17,600 to 23,200, the low count at the close of the disease. Puncture fluid thick and turbid.

Case II.—Four months of age; observed from the twelfth to the twenty-ninth day of the disease; leucocyte count from 32,600 to 34,000. Puncture fluid cloudy.

Case III.—Six years of age; observed from the fifth to the fourteenth day of the disease; leucocyte count early of 30,000. Puncture fluid purulent.

Case IV.—Three years of age; observed from the ninth to the eighteenth day; leucocyte count ranging from 34,000 to 55,000. Puncture fluid cloudy.

Case V.—Ten months of age; observed over six weeks; leucocyte count from 10,600 to 26,000, the latter toward the close. Puncture fluid turbid.

Case VI.—Six months of age; observed from the twelfth to the forty-seventh day of the disease; leucocytes, 28,000 to 17,600 early in the disease, and 9,800 to 18,200 later on, the lower count at the close of the disease.

It may be stated that in the so-called basic cases in infants and young children the leucocyte count early in the disease may range from 32,000 to 34,000, but toward the close when the temperature rarely rises above the normal the leucocyte count may fall as low as 9,800 to 10,600. In this respect the leucocyte count resembles what is found in cases of tuberculous meningitis; and these cases on account of this have been mistaken by some for tuberculous meningitis. The leucocyte count in the fatal cases in which the fluid obtained by lumbar puncture is quite turbid, with a sediment resembling pus, is apt to be high, mounting to 35,000 to 55,000. On the other hand, fatal cases with a thick turbid fluid on puncture, may give a count not exceeding 23,200.

Cases which have recovered, showed a leucocyte count of 14,000 to 28,000 during the course of the disease; the leucocytes may have mounted as high as 45,000, as in one case on the twenty-first day of the disease.

It cannot, therefore, be said that a prognosis as to the recovery or fatal issue can be made from the leucocyte count alone without taking into account the duration of the disease and the character of the lesion as revealed by clinical methods of precision.

Characteristics of the Cerebrospinal Fluid Obtained by Lumbar Puncture.—So much has been said of the physical characteristics of the fluid obtained by lumbar puncture in cases of meningitis, either of the epidemic cerebrospinal, the tuberculous, or the suppurative forms, that the writer scarcely deems it proper to repeat what has been said upon this subject. The cytology of the fluids obtained by lumbar puncture in cases of cerebrospinal meningitis is of particular interest as regards the possibility of making a diagnosis from the elements found in the fluid alone, apart from the bacteriology. Of 13 cases studied with reference to the cytology, nine showed a preponderance of polynuclear leucocytes; and four showed mononuclear cells as prevailing elements. It would seem, therefore, that in the majority of cases of cerebrospinal meningitis of the epidemic type, the lumbar fluid presented a polynuclear leucocytic picture. In 15 cases of tuberculous meningitis, studied with a view to noting the character of the cell elements, 14 showed a prevalence of the mononuclear cells, and one case an equal

number of mononuclear and polynuclear cells. In the above studies all the fluids were subjected to careful centrifuge.

It would seem, therefore, that in tuberculous meningitis there is a prevalence of mononuclear cells, and this is so constant that it would seem to us to be characteristic, and verifies what is known from publications on this subject. It will be seen, however, that there are cases of cerebrospinal meningitis of the epidemic type, three of which we have noted, in which there is a cytological picture closely resembling that seen in tuberculous cases. In chronic cases, instead of a predominance of polynuclear cells in the sediment of the fluid obtained by lumbar puncture, the mononuclear picture is apt to present itself, closely resembling what is seen in the tuberculous cases. This is especially true of the chronic cases of cerebrospinal meningitis of the basic type described by Still. Bendix explains this variation from what might be called the normal picture in cerebrospinal meningitis by the fact, proven by Ribbert, that in chronic inflammations lymphocytes abound in the transudates; whereas in acute inflammations, leucocytes abound.

It seems to us that the physical characteristics of the fluid obtained by lumbar puncture aid us but little in coming to a conclusion as to the form of meningitis present. In cerebrospinal meningitis of the epidemic type we have obtained fluid which has been quite clear, with scarcely any sediment, cloudy varying to the purulent fluid; whereas in the tuberculous forms of meningitis, the fluid was clear in 72 per cent. of our cases, but was quite cloudy in others, and more or less cloudy in the remaining number of cases. In all the epidemic cerebrospinal cases which we consider as substantiated either by the clinical picture or the results of lumbar puncture, the *Diplococcus meningitidis* was found at one time or another in the puncture fluid. In one case it was found in two successive punctures, and in a third puncture it was absent and failed to give any culture when spread on media; and in a fourth puncture the diplococcus reappeared. To my mind this simply means that in the fluid obtained in the third puncture, the diplococci were so few in numbers as to elude search conducted with the ordinary care.

The earliest period at which we have found the diplococcus in cases of cerebrospinal meningitis of the epidemic type, was within twenty-four hours after the onset of the disease; and we have established it as late as the fifteenth week of the disease. It is apt to elude search and fail to give any result on media in chronic cases, especially of the posterior basic type.

In this connection, the bacteriology of the fluids obtained from cases of tuberculous meningitis is of interest, and it may be said here that there has been much difference of opinion as to the presence of tubercle bacilli in fluid obtained by lumbar puncture in cases of tuberculous meningitis. Whereas, Lichtheim, Lenhartz and Bernheim found that tubercle bacilli were constant in the sediment of the fluid obtained from tuberculous meningitis; others, such as Cassell and Marfan have asserted that their presence is only occasional. Our experience in this regard supports the contention of Pfaundler, that the discovery of tubercle bacilli in the fluid obtained by lumbar puncture in tuberculous cases depends much on patience and technic. This is well seen in our own cases. At a time when our technic was imperfect, when we did not centrifuge our fluids carefully, we failed to find the tubercle bacilli. Of late, however, we have made a special study of this question, and during the past year, of 14 cases diagnosed by me clinically as tuberculous meningitis, tubercle bacilli were found in 13 by subsequent lumbar puncture by Dr. E. P. Bernstein, of the pathological staff. To my mind this would prove absolutely that tubercle bacilli can be found by careful search in the puncture fluid of all cases of tuberculous meningitis. In some cases the search must be quite prolonged. In other cases, especially of children brought in late in the disease, we failed to obtain tubercle bacilli in the puncture fluid before death; but they were found to exist in abundant numbers in the fluid obtained by puncture immediately after death. It is hard to account for this apparent inconsistency, but I explain it by the fact that there is during life probably a constant wave of motion in the cerebrospinal fluid, thus securing the equal distribution of the bacilli throughout the cerebrospinal space. As soon as death occurs, this circulatory wave is suspended and a sedimentation occurs and the bacilli are thus obtained in the lower part of the canal.

Mortality.—It need not be said here that in epidemics of cerebrospinal meningitis the mortality among children will vary largely not only with the severity of the epidemic, but with the malignancy of the infection. In some epidemics the malignant cases, that is those which die within twenty-four or forty-eight hours, seem to be more numerous than in other epidemics. Of 37 cases in five years' service previous to the present year which clinically presented all the classical features of cerebrospinal meningitis, 21 were absolutely substantiated either by lumbar puncture or post mortem to be of the epidemic type. Of these 21 cases, the mortality was 42.8 per cent. Of the whole number of 37 cases, the mortality was 35.6 per cent., some were not punctured because the symptoms were self-evident, others were punctured but failed to yield but little fluid, with negative bacteriological results. Most of the fatal cases occurred in infants below one year. Of 15 fatal cases, eight were less than one year of age and two below two years. Thus, the older the child the better its chances of conquering the infection. I have records, however, of cured cases in infants of five months, and one one year of age, in which the diagnosis of cerebrospinal meningitis of the epidemic type was substantiated by cultures from the fluid obtained by lumbar puncture.

Complications.—In the 37 cases of epidemic cerebrospinal meningitis which form the basis of

this paper, we have noticed that the complications were exceedingly few. Those cases that recovered did so with very little to show that the nervous system in any of its extent had been severely compromised. The eyesight was not injured, nor was there in any of the cases, a subsequent hydrocephalus. In other words, the recoveries when they occurred were complete and satisfactory. This is, of course, not due to any modes of treatment employed but to the nature of the cases.

The most common complication seemed to be otitis. Herpes labialis was found in only two cases of the 37 and none of the cases presented joint complications, in this respect differing from the joint complications in the adult. I have lately seen one case of joint involvement. Erythemata and evanescent eruptions were observed here and there.

Most peculiar and striking have been several cases of the malignant type which I have seen this year in which death took place within twenty-four hours after the initial symptoms appeared. In both of these cases there was a scarlatinous erythema. This disappeared and was replaced by a purpuric eruption, extensive in character, the skin of the infants and children appearing as if they had been beaten. Ecchymoses were blotchy and of wide extent distributed over the back, thorax, abdomen and upper and lower extremities. The diagnosis in these cases left no question of a doubt, being substantiated by the presence of meningococcus in the fluid obtained by lumbar puncture.

Posterior Basic Meningitis.—Still, of London, has given peculiar interest to this form of meningitis through his investigations of 15 cases of the disease. His clinical summary of the characteristics of these cases is quite classical and may be mentioned here for the sake of completeness: An infant becomes fretful, irritable, peevish, has one or more convulsions, vomits, and then in a few days the mother notices that the head is drawn backward, the limbs are rigid, and there is partial or complete opisthotonos. Quite a percentage of these cases last for weeks and may recover; others pass into the chronic stage, which may last for months, with complicating hydrocephalus. During the course of the disease, the rigidity of the neck, the retraction of the head, becomes extreme, and finally the infant passes into a condition resembling a tetanic state, with its arched back, its retracted occiput, the upper extremities in the position of extension, the hands clenched, very much as is seen in forms of tetany. The lower extremities remain in a condition of rigidity and of extension, and the feet and toes both extended. It was formerly thought that these cases were tuberculous; but Still has found that in 13 of his 15 cases he could isolate a diplococcus which to-day may be considered identical with the *Diplococcus meningitidis.* Still and Nuttall both consider this form of meningitis a type of sporadic spinal meningitis, with the same etiology as that of the epidemic cases. Any one who has much to do with infants and children has seen these cases, and I have seen quite a number of them.

These cases have come to me in the hospital in the subacute stage, and, as is very often the case, I have had no opportunity until recently to make a post mortem in a case of basic meningitis. In one case the fluid withdrawn by lumbar puncture was quite clear, resembling that of hydrocephalus. The fontanelle was bulging to a considerable extent, being open, and we drew off considerable fluid by repeated lumbar puncture. We have been unable, however, to cultivate the *Diplococcus meningitidis* from this fluid. The cytology in this case to which I refer showed a preponderance of mononuclear lymphocytes. In none of the cases have we been able to prove the tuberculous nature of the disease by the injection of cerebrospinal fluid into animals, and this I am inclined to believe would support the contention of Still that this type of cases is distinctly caused by the *Diplococcus meningitidis* and is to be classed with the epidemic cases.

I have recently been fortunate in obtaining a post mortem on a case of posterior basic meningitis in the puncture fluid of which I obtained the *Diplococcus intracellularis* both by cover glass stain and culture. The history of the case is as follows:

Female child, aged two years, with a negative family history. The child had been born normally, had not suffered from any infectious disease; although a year previous had an abscess in the neck, which was cured in three weeks. No history of ear trouble; has always been a healthy, bright child.

Present History.—The illness was of five weeks' duration, began suddenly with fever and general convulsions; since then the child has felt better at times, and at other times, chiefly toward evening, the symptoms have reappeared. The child became stuporous since yesterday. The father thinks it is blind; it has vomited occasionally for the past three days. There have been sudden movements of the upper and lower extremities. During this illness the child has become much emaciated. There is no cough. The bowels and urination are normal. No previous history of traumatism. The father has not noticed any enlargement of the child's head during the illness.

Present Status.—The child lies with its head retracted and body slightly curved, the concavity somewhat to the left. There are occasional purposeless movements of all the four extremities, more marked on the right side. These are sometimes so limited as really to constitute tremors. The child starts at the least sound. Is unconscious. The eyes are open, pupils dilated, though they react to light. The forearms are extended from the arms, the hands clenched; the lower extremities are extended, the feet extended, as also the toes are flexed into the plantar surface of the foot. At times the child is rigid. There is rigidity at the back of the neck, and this rigidity is increased if the child is handled. At such times,

there is extreme opisthotonos, the head is drawn back at an angle to the trunk. In other words, there is a spastic condition of all the extremities. The knee-jerks are increased; there is no clonus. The spasm at times is extreme, and a good deal of force is necessary to move the hands or legs. There is a tâche cérébrale. The respirations are very irregular, sometimes superficial and at others deep. There is no paralysis either of the muscles of the face or those of the orbit of the eyes. The ears are negative; heart and lungs show nothing peculiar. The liver normal to percussion; spleen palpable just below the free border of the ribs. Abdomen retracted. The skin shows a slight erythematous rash on the trunk. The throat cannot be examined on account of the fixity of the lower jaw (trismus).

The further history of the case is uneventful. The temperature was normal on admission, rose toward the close to 101° F. The pulse ranged from 100 to 140, being quite irregular at times. The respirations ranged from 28 to 48. Toward the close, the opisthotonos retraction of the head and rigidity became very marked. The child presented all the features that are characteristic of basic meningitis. The lumbar puncture was made in this case two days before the fatal issue, the child dying four days after admission to the hospital. A flocculent fluid was obtained which showed the presence of 73 per cent. polynuclear leucocytes, and 27 per cent. mononuclear lymphocytes. The spreads and culture of the puncture fluid showed the *Diplococcus intracellularis*, negative to Gram. There was no sugar in the fluid. The child died suddenly in the afternoon of the fifth day after admission. A post mortem was obtained on the brain alone, and showed a classical basic meningitis, as described by Still. The convexity showed only slight meningitis; congestion was marked and there were areas of opaque tissue in the pia or old organized foci of inflammation.

In the post mortems made by Still, he found as an accidental complication recent or old tubercles in a few cases; but in these very cases he has been unable to find any tubercles of the brain or cord. On the contrary, he has established a diplococcus in the ventricular fluid, and therefore considers the tubercles as an accidental complication and not a primary cause of the disease.

Treatment.—The more we study the methods of treatment pursued in the management of cerebrospinal meningitis, the more we are led to the conclusion that the disease, very much like pneumonia, is a self-limited one, and that all we can do is to relieve the suffering of the patient and treat the complications. The results of treatment seem to be very closely connected with the severity of the epidemic, and that of the infection in the various epidemics. Thus, in an epidemic in Oporto there is a record of 56 deaths in 91 cases, a mortality of 62 per cent. In other epidemics, the mortality has been quite low, 25 per cent., and in others higher than this percentage, as may be seen by referring to the section on mortality. And still in these epidemics very much the same treatment has been pursued, if we except one procedure, viz., that of lumbar puncture.

Much has been expected of lumbar puncture, and still, it must be said, comparatively little has been realized from it, in a therapeutic sense. Seager, in recording the mortality and treatment observed by him in cases of epidemic cerebrospinal meningitis, shows that by simple lumbar puncture 9 cases in 20 died, a mortality of 45 per cent. In the treatment by baths, 60 per cent. died. He then gives the statistics of the latest procedure, that of lumbar puncture, followed by the injection of a number of c.c. of a one-per-cent. solution of lysol. Of 31 cases treated by such an injection into the cerebrospinal space, 13 died, a mortality of 42 per cent. In the same clinic where Seager observed these procedures, seven cases were treated with an injection of oxycyanide of mercury, and four died. Neither of these procedures prevented relapses in the cases observed by Seager, and these were quite frequent. In the epidemic in Oporto, 26 cases were treated by simple lumbar puncture. Of these, eight died, a mortality of 30 per cent.

In considering the benefits of lumbar puncture in an epidemic of cerebrospinal meningitis, there are some, such as Osler, Wentworth, Concetti, Travers Smith and others, who think that this procedure is of decided benefit to the patient, inasmuch as headache and delirium are often relieved.

My own experience, and this is considerable, teaches me that we cannot say as yet that lumbar puncture is curative. Indeed, it cannot prevent relapses, as I have proven to my own satisfaction in cases in which the temperature had dropped after lumbar puncture, remained normal for a week, and then, without any apparent cause, a new attack was inaugurated. The fluid after the last puncture having been quite clear and sterile, possibly on account of the paucity of microorganisms, became very turbid again and there recurred an intermittent curve, lasting over three weeks. I have seen the temperature rise after lumbar puncture, and the patient on the surface did not seem to have been benefited; but on a close study of the cases, I have found that the temperature is not a guide as to the efficacy of the procedure of lumbar puncture. Lumbar puncture certainly relieves symptoms of pressure, for in older children who can describe their sensations, there is much relief after the withdrawal of 40 or 50 c.c. of fluid from the cerebrospinal canal. In fact, in one case, I remember distinctly a little patient of twelve years who actually requested (so severe was the headache) that the procedure should be repeated, inasmuch as it was the only thing that gave her relief. Therefore, if the irritability is great and headache is severe, as may be judged even in children by the rational symptoms, lumbar puncture is indicated.

Again, if rigors are frequent, lumbar puncture is certainly indicated inasmuch as a certain amount of purulent exudate is thus withdrawn

in the same sense as it would be indicated in a pleurisy.

Lumbar puncture is inefficient in certain types of cases in which there is extreme retraction of the occiput, rigidity and even opisthotonos (basic meningitis). In some of these cases, introduction of a needle it attended by no results; that is, there is a dry tap. It has been shown that in these cases there is danger of sudden dilatation of the ventricle, and what might have been relieved by the only procedure known in medicine, lumbar puncture, fails in the very cases in which it is most needed.

Again, lumbar puncture gives us a very good idea, in a prognostic sense of the future fate of some cases. Where the cerebrospinal fluid is thick and purulent, and flows slowly from the canula, the prognosis is grave. I have not succeeded in saving any of these cases. Particularly encouraging are the cases in which the fluid obtained by lumbar puncture is of a cloudy appearance, at most showing a straw color.

In a procedure in which so little is known as to its efficacy, it is quite to be expected that all sorts of modifications should have been suggested. I refer to the injection of chemicals or antiseptic fluid, such as lysol and the oxycyanide of mercury. To my mind, none of these procedures has lessened the mortality.

Our treatment has consisted simply of a lumbar puncture whenever indicated by high temperature, continued excessive irritability of the patient, stupor, constant headache, and delirium or rigors. Following out this method, we have felt that we had at our disposal a very excellent method, not only of relieving these symptoms, but of relieving pressure on the vital organs, the brain and cord, at the same time withdrawing from the cerebrospinal space a certain amount of purulent fluid. In view of the fact that the bacterial life of the meningococcus seems to be a self-limited one, I doubt very much whether the procedure of lumbar puncture has a direct influence in shortening the disease. In younger infants and children, however, I do think that repeated lumbar puncture might aid materially in preventing certain complications, such as hydrocephalus following cerebrospinal meningitis, which, as you all know, is a very serious consequence with which to be confronted. Therefore by relieving the pressure, we may possibly prevent in these young subjects a tendency which is present to dilatation of the ventricles and the accumulation of fluid therein.

Our experience with lumbar puncture has been quite extensive. We have never had an accident which could be attributed directly or indirectly to the procedure. Our method of performing lumbar puncture has followed closely that advised by Quincke. If we were unsuccessful and obtained what is known as a dry tap, we have repeated the puncture in another space, but we have not gone further than this. In several cases the primary puncture was followed by quite a profuse hemorrhage. Quincke thinks that this hemorrhage can be traced to the puncture veins in the subdural space. In none of the cases in which hemorrhage occurred have we seen any ill effects follow. In fact, the cases in which hemorrhage occurred made a good recovery without paralysis, especially of the lower extremities.

A peculiar symptom, which I have not noted elsewhere, is that of a desire to urinate at the time of the entry of the trocar in the cerebrospinal space. This, however, is only momentary, and disappears as soon as the trocar is withdrawn.

As to the number of times which a case should be punctured, there is, of course, no set rule. If the temperature remains down after a puncture, and the irritability and headache are not very marked, it is well to hold our hand. If, however, there is a subsequent rise of temperature we may puncture, though certainly not more often than at intervals of four or five days.

As to the quantity of fluid withdrawn in every case, this will vary. In some cases the fluid flows very rapidly from the canula; is quite clear, or slightly turbid, and in a very short space of time 70 or 80 c.c. are withdrawn before there seems to be a relief of tension, which is judged principally by the rapidity with which the fluid flows from the canula. If the fluid flows slowly, drop by drop, we rarely withdraw more than 30 c.c. at a sitting.

Our further treatment, as published elsewhere, has consisted of hot baths for the rigors; sponging, for the temperature; the intestinal canal was kept open with calomel, and we have administered in all of our cases iodide of potassium and sodium in full doses.

I have never made a so-called cervical puncture; nor do I think that lumbar puncture can be ranked with aspiration of the chest as an emergency procedure. Thus, given a case of cerebrospinal meningitis with a very high pulse, such as has occurred in my practice lately of 200, a condition of coma, and all the symptoms of malignant cerebrospinal meningitis, lumbar puncture has seemed of little avail, as practised to-day.

In conclusion I wish to express my thanks and appreciation to my former assistant at the hospital, Dr. C. F. Jellinghaus, who carefully compiled the statistics of this work.

A PLEA FOR THE ORGANIZATION OF A "SOCIETY OF SANITARY AND MORAL PROPHYLAXIS."

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IT is proposed to form in this country a *Society of Sanitary and Moral Prophylaxis,* the object of which is the study of the means of every order —sanitary, moral and legislative—(the legalization of prostitution excepted) which promise to be most effective in preventing or diminishing the spread of diseases which have their origin in the Social evil. This Society is to be composed of medical men, representatives of the clergy, of the law—public educators, sociologists and public-

spirited men generally—similar to societies which have been organized in various cities and countries of Europe.

At first glance it might appear that the prophylaxis of these diseases, as of other infectious diseases, dangerous to the public health, lies exclusively within the province of the medical profession. But experience has shown that this class of diseases cannot be dealt with as a purely sanitary problem, they are not susceptible to the application of the sanitary methods ordinarily employed against contagious diseases. Sanitary science must take cognizance of the cause of disease and especially of the means by which it is spread. The cause of these diseases resides in social conditions which the sanitarian cannot control and their communicative mode cannot be reached by the strong arm of repression.

In their essential nature they are not merely diseases of the human body, but diseases of the social organism. The problem of their prevention or control involves not only questions of hygiene, but questions of morality—questions affecting the most intimate relations of our social life. This problem is most difficult and delicate and requires for its solution not only a thorough knowledge of existing evil conditions, but a largeness of ideas and a breadth of view which is not possible to those who look at it from the sanitary side alone. To correct these evil conditions there should be a union of all the social forces which work for good in the community.

THE NEED OF SUCH A SOCIETY.

That there is a need, and a most urgent need, for such an organization is abundantly evident from a consideration of the following facts:

It is now generally recognized that the class of diseases comprehended under the general term *venereal*, together with alcohol and tuberculosis, constitute the three great modern plagues which afflict humanity. Tuberculosis has been subjected to sanitary control, leagues have been formed against alcohol, and legislative aid has been sought through high-license and other restrictive measures to limit its evil influence, but the venereal plague is practically ignored and, in this country at least, its ravages are unchecked and apparently unnoticed.

THE MAGNITUDE OF THE VENEREAL PERIL.

The significance of syphilis as a social danger has long been appreciated by the medical profession. Years ago Prof. Gross declared that "a greater scourge than yellow fever, and cholera and smallpox combined is quietly installed in our midst, sapping the foundations of society, poisoning the sources of life, rendering existence miserable, and deteriorating the whole human family." According to Sir Thomas Watson, "it counts its victims not only in the ranks of the vicious and self-indulgent, but among virtuous women and innocent children by hundreds and thousands." When this was written, less than a generation ago, it was not known, even by the medical profession, that under the guise of what was considered a simple local disease of the urethra there lurked an infection which, in respect to the character and sum total of its dangers, is a greater curse to the human family than syphilis. Modern science has shown us that gonorrhea, which is regarded by the bearer as of no more significance than a common cold, which is treated as a joke or with the contempt of ignorance, is the greatest social pest of the age.

EXTENSIVE PREVALENCE.

Since these diseases are not subject to official registration the amount of venereal morbidity in this country does not admit of mathematical expression. In Europe it has been estimated by a distinguished authority that fully 75 per cent. of the adult male population contract gonorrhea, and that from 10 to 15 per cent. have syphilis. Assuming that we are a more virtuous people than those of Europe, it would be a most conservative estimate to say that the morbidity from both these diseases would represent 60 per cent. of the adult male population. Venereal morbidity is larger in urban than in rural populations, but everywhere its incidence falls most heavily upon the young.

It is a fact worthy of consideration that every year in this country 770,000 males reach the age of early maturity—that is, they approach the danger zone of initial debauch. It may be affirmed that under existing conditions at least 60 per cent., or over 450,000, of these young men will become infected with venereal disease—infallibly infected—if the experience of the past is to be accepted as a correct criterion of the future. Twenty per cent. of these young men will become infected before their twenty-first year, over 60 per cent. before their twenty-fifth year, and more than 80 per cent. before they pass their thirtieth year. This computation is not based upon loose conjecture, but upon carefully compiled statistical evidence. No allowance need be made for the incidence of mortality, since this is more than compensated for by the influx of young immigrants. The census of 1900 gives over 787,000 males thirty years of age.

These 450,000 infections, be it understood, represent the venereal morbidity incident to the male product of a single year; each succeeding group of males who pass the sixteenth year furnishes its quota of victims, so that the total morbidity from this constantly cumulative growth forms an immense aggregate.

The pathological importance of these diseases is to be measured not only by their effects upon the individual, but upon the family and the race.

EFFECTS UPON THE INDIVIDUAL.

The large proportion of individuals infected by venereal disease get well, some of them die, many of them suffer for years or during their entire life from its consequences.

Syphilis is a far more serious disease than was formerly supposed. Every year adds to our

knowledge of the number, variety, and gravity of its far-reaching complications and especially its morbid determinations to the internal organs most essential to life. Many affections of the brain, the cord, the liver, the heart, and the arterial system have their origin in syphilis. Of all the internal organs the brain is the most frequently affected by syphilis, and paresis is the most common termination. While syphilis, in the adult, is not a frequent cause of immediate death, the changes set up in certain organs or systems of organs are often the essential cause of death at a more or less remote period. Syphilis kills people to-day as it did in the 16th century.

Gonorrhea is an infection which, in addition to its local inflammatory complications, which often render the individual sterile, is capable of causing constitutional complications of a serious or even fatal character—such as deforming and incurable inflammations of the joints, pericarditis, meningitis, peritonitis, etc. The undeniable and scientifically demonstrated danger of gonorrhea is especially manifest in its serious effects upon the pelvic organs of women. It is the most common cause of inflammatory affections peculiar to women, which ruin her health, extinguish her conceptional capacity, and condemn her to a lifelong invalidism or the sacrifice of her reproductive organs to save her life.

The chief significance of these diseases as a social danger arises from the fact that they specifically affect the organs of generation—they damage or destroy the functions through which life is perpetuated, and thus defeat the social aim of marriage.

EFFECTS UPON THE FAMILY.

Pinard found that in 10,000 consecutive cases of miscarriages or abortions, 42 per cent. were caused by syphilis; the remaining 58 per cent. due to all other causes combined, artificial or otherwise. The destructive effect of syphilis upon the offspring is still further manifest in children stillborn at full term or who die shortly after birth. The mortality from hereditary syphilis ranges from 60 to 86 per cent., while those who survive are affected with various organic defects and degenerative changes which unfit them for the battle of life. If they reach maturity and marry they may transmit to their descendants—the third generation,—the same class of organic defects which they have inherited.

It has been computed that at the very lowest estimate, hereditary syphilis kills every year in France alone, 20,000 children, which represents 7½ per cent. of the mortality from all causes combined. It may be said that it is better that these children should die than survive as a race of inferior beings; it is to be remembered, however, that but for the fact of syphilis in the parents these children might have been born in conditions of vitality and physical vigor.

Gonorrhea is an even more potent factor of depopulation than syphilis, from its greater prevalence and more frequent introduction into married life and its inhibitory influence upon the conceptional capacity. It is computed that 50 per cent. of gonorrheal women are absolutely sterile, and that gonorrheally infected men are responsible for 20 per cent. of sterile marriages, when the sterility is not of choice, but of incapacity.

While gonorrhea is insusceptible of hereditary transmission, the child born of an infected mother is exposed to inoculation of the eyes with the virus resulting in the terrible affliction of blindness. Eighty per cent. of the blindness of the newborn is caused by gonorrhea, while it is computed that from 20 to 30 per cent. of blindness from all causes is due to gonorrhea.

FREQUENCY OF MARITAL CONTAMINATION.

The amount of venereal morbidity in married life is an unknown and unknowable quantity. Thousands of married women are infected without knowing or even suspecting the name or nature of the disease. The insidious character of the infection, especially of gonorrhea, favors dissimulation, and when known, every motive—pride, self-respect, shame—prompts to its concealment. It may be a startling statement, but nevertheless true, that there is more venereal infection among virtuous wives than among professional prostitutes in this country. Noeggerath stated that of every thousand men married in New York 800 had latent gonorrhea from which their wives became infected. Admit that this is an exaggeration—a gross exaggeration, even—say 8 per cent. instead of 80 per cent.; of the 16,000,000 married women in this country 8 per cent. would give over one and a quarter million infected from gonorrhea alone.

Unfortunately, the diseases of vice when transplanted to the bed of virtue develop their worst effects. The function of marriage is to create life, and in fulfilling this function the individual danger of the disease, especially of gonorrhea, is greatly accentuated. Pregnancy often transforms a latent and hitherto inoffensive gonorrhea into an intensely virulent infection, and the process of parturition opens the way to its upward ascension to a vital organ—the peritoneum—with results dangerous to life.

We are accustomed to recommend marriage to young men as the surest preservative against venereal infection. Can we with a clear conscience recommend to young women marriage with men who have led dissipated lives? Surely there is something rotten in a social system which places no restriction upon that individual liberty which permits men to poison their wives with venereal disease—which throws no sanitary safeguard around that relation which society has instituted for its own perpetuation. Certainly there can be no severer arraignment of that false system of education which directly fosters, and even renders compulsory, the ignorance which is largely responsible for these social crimes.

It cannot be gainsaid that the vast majority of infections in married life are effected through

ignorance—the opinion of all physicians who have had much to do with this class of cases is concurrent upon this point. The average man is not a criminal—he does not wreck the life and health of his wife and children knowingly and wilfully. In most cases he does it through ignorance of the nature and terrible consequences of his disease—ignorance of the prolonged duration of its contagious activity and, especially, ignorance of the fact that it is often infectious after apparent cure.

REMEDIAL MEASURES.

The cardinal principles of prophylaxis are, (1) To preserve the healthy from infection; (2) To prevent those already infected from infecting others.

It is the consensus of opinion among those who have studied this subject that a general diffusion of knowledge respecting the dangers, individual and social, of venereal diseases, their modes of communication, direct and indirect, would constitute the most efficient means of prophylaxis. This knowledge would be of inestimable benefit to the young in preventing ignorant and reckless exposure to dangers which many of them do not even know exist. Of the 4,000,000 or more of males in this country, between the ages of sixteen and twenty-one years, how many have received even the most elementary instruction in the physiology of the organs of generation? These young men are launched into the world without any knowledge of the hygiene of the sexual function or the dangers which attend its irregular exercise. They have been taught nothing of the diseases which are almost inseparable from commerce with bad women, or of the serious consequences to their health which those diseases may entail. It is believed by medical men who are most competent to judge these questions that ignorance is responsible for a large proportion of infections among the young, and that education would preserve thousands from exposure.

To whom this education should be addressed—what should be its scope or extent, and how, or through what agencies, it should be imparted—are subjects for consideration by the proposed Society. As regards the latter point, it might be assumed that this enlightenment should come through the agency of the medical profession. But the physician's opportunities for this educational work are comparatively restricted. He rarely comes in contact with the young man except in his capacity as a patient, after the harm is already done. So far as concerns the vast army of the working class and the poor who are treated by public charity, he practically never sees them except in the crowded classes of the dispensaries. The mode of this education cannot be individual, it must be collective and conveyed through means of lectures, conferences, tracts, or circulars. The physician cannot organize popular lectures; he may write papers exposing the dangers of venereal diseases, but they never reach the general public.

The proposed Society should be a centre for the diffusion of this enlightenment; it should be an influential force in effecting a reform in an educational system which now neglects all instruction in the hygiene of one of the most important functions of the body; it should propagate the idea that this hygienic education forms the most essential part of the training of the morals of young men.

Whatever may be the value of education as a preservative against exposure to infection, it will certainly constitute a valuable prophylactic measure against the introduction of these infections into marriage. Medical men now look upon certain marriages as moral crimes. When the plea of ignorance can no longer be invoked to shield those who carry disease and death into their families they should be declared legal crimes, involving not only civil but penal responsibility.

In fulfilling the second indication, the most valuable prophylactic measure is the prompt sterilization of sources of contagion by efficient treatment. The object is to cure as many as possible of those infected in order to sterilize the greatest number of foci. To accomplish this object the treatment should be gratuitous and available to all—not so much in the interest of the individual as in the interest of others he might expose to infection. Without entering fully into this subject, it may be said that the provisions for the treatment of this class of sufferers are notoriously inadequate, restrictive, and not adapted to the nature of the disease. Venereal patients are debarred entrance into our general hospitals, and discriminated against in various ways.

One or two gross abuses growing out of the insufficient hospital accommodations in this city may be briefly referred to. Of the thousands of respectable married women in this city infected with syphilis by their husbands some require hospital care; they can be received only in the female venereal ward of the City Hospital; they are compelled to inhabit the same room, sleep in beds side by side with the lowest and most abandoned prostitutes. It sometimes happens that a young girl who has taken only the first step in the downward path, and who, in being robbed of her virtue has lost her health, is compelled to go to the hospital; she is subjected to the close companionship and demoralizing influence of women old in vice, who are adepts in the arts of proxenetism. This is not the worst; young girls under fifteen years of age who come under the care of the "Society for the Prevention of Cruelty to Children," when found diseased, usually from criminal assault, are placed in this same ward and detained until they are pronounced cured. A female venereal ward has been termed *"un bouillon de culture pour la prostitution."* This society is not to blame for this practical perversion of the object for which it was founded, since the city affords absolutely no other provision for the treatment of these cases.

There are many social conditions which favor

the spread of these diseases — many of them requiring for their correction the intervention of the Administrative authorities, which would properly come within the scope of the Society's work. They are many-sided questions, and require many-sided minds to deal with them wisely and effectively.

ATTITUDE OF SOCIETY.

In the presence of this peril which so seriously menaces the public health and is fraught with such momentous consequences to the family and the race, the social forces are apathetic and inactive. Society does not seek to deliver itself from this evil, its only preoccupation is to cover up and conceal, to shut its eyes to its existence. From the mistaken idea that these diseases are always contracted through voluntary exposure and bear the stamp of immorality, their victims are without the pale of public sympathy or public protection. The public does not know that the immense majority of infections occur in the young, the inexperienced, and the irresponsible through ignorance and lack of moral training; it has no conception of the number of innocent women and children who are infected in the marriage relation.

It will be seen, then, that the diseases which it is the object of this association to prevent are preeminently Social Diseases—they affect the dearest interests of society, they enter into the most sacred relations of human life, they seriously menace the welfare of the family and the future of the race, they constitute a social danger of the greatest magnitude. They are diseases from which society suffers, and yet society views them with indifference, while the medical profession regards them with the deepest concern, and seeks to limit their spread. But the medical profession recognizes its inability to cope successfully with conditions which lie entirely without the sphere of sanitary influence or control.

We ask members of the laity—whose position in the community commands respect, whose opinions carry weight, who can influence public sentiment, institute educational reforms and secure needed legislation—to cooperate with the medical profession in forming a league against this Social Peril. This movement, which has for its chief objects the preservation of the youth of this country from ignorant exposure to infection and the safeguarding of marriage from the desecration of loathsome and dangerous diseases, appeals to that humanitarian instinct which prompts protection to the irresponsible ignorant, as well as the innocent and helpless members of society.

66 West Fortieth Street.

City Hospital for Homeopaths.—A bill has been introduced into Councils providing that a site at Twentieth street and Lehigh avenue be set aside for a department of the Philadelphia Hospital to be conducted by the homeopathic school. Action on the bill cannot be taken until after the summer recess.

THE MANAGEMENT OF OCCIPITOPOSTERIOR POSITIONS OF THE VERTEX.

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My object in selecting this title for a paper is not to add anything new to what is already known of occipitoposterior positions, but to corroborate and emphasize many of the recent statements made for their management from the standpoint of hospital and private practice.

In the first place there is a great discrepancy in the frequency with which these positions are encountered by various observers. Most writers estimate 70-75 per cent. of all vertex cases as primarily L.O.A., 20 per cent. R.O.P., 4 per cent. R.O.A., and only 1 per cent. L.O.P. I do not believe that these figures are correct. Before we can obtain their relative frequency we must be positive of the position of the head at the beginning of labor, as one who examines only during the second stage will class many cases anterior which started originally as posterior positions. The hospital statistics, which I have collected, show that primary posterior positions occur in about the proportion given above. Taking at random a thousand vertex cases from the records of the Sloane Maternity Hospital, I found 194, or a little less than twenty per cent. designated as primary occipitoposterior positions, but, as over one-half of the thousand cases were admitted in labor, the percentage should, in reality, be much higher. Again 341 cases were indexed as L.O.T. or R.O.T. positions. A great many of these probably also started as posterior positions, but had not completely rotated, so that these hospital figures are far from being correct. Right here I might state, on the other hand, that we should add both of these positions (L.O.T. and R.O.T.) to the four ordinarily given, for undoubtedly a goodly number of vertex cases start in this manner, not only where there is a relative flattening of the brim of pelvis, but also where the pelvis is normal or even justo-major in dimensions.

Another fact especially brought out in these hospital statistics is the relative frequency of right and left posterior positions. The ratio is given in text-books as 20 to 1, but in this series of 1,000 cases it is found to be 109 to 85, or almost equal in number.

Probably from one's own private practice, where cases are more carefully watched and a diagnosis of position is usually made shortly before and always at the beginning of labor, can we get at the true figures. The only difficulty is obtaining a large enough series from which to make general deductions. In the first 100 vertex cases, occurring in my private practice, I have recorded 27 (27 per cent.) R.O.P. and seven (7 per cent.) L.O.P. positions, showing that the latter occurred less frequently than at the Sloane Hospital, but I also recorded 15 cases (or 15 per cent.) starting as L.O.T. and only six (or 6 per

cent.) as R.O.T., and it is more than likely that some of the former started posteriorly.

Whatever the value of these figures, they show at least that we should regard L.O.T. and R.O.T. as primary positions of the vertex, and that left occipitoposterior positions occur more frequently than is ordinarily imagined.

The diagnosis of these positions can readily be made. If in last two weeks of pregnancy the head has not entered the pelvic inlet, or does not even dip therein, we should suspect that the occiput is posterior, even without carefully examining for an exact position. Yet this riding high of the head, of course, may be caused by a disproportion between the size of the head and the size of the brim of the pelvis. My experience has taught me that only an excessive amount of abdominal fat or liquor amnii will render unreliable the signs obtained before labor by abdominal palpation and auscultation. Vaginal examination will clinch the abdominal diagnosis, provided the cervix is sufficiently dilated to permit one to feel the sutures and fontanelles.

At the time of labor, when the pains occur at short intervals, or the uterus is tightly contracted about the child, abdominal examination may fail to give positive results. In such cases the vaginal examination alone must be relied upon.

There are certain men who claim that enough can be obtained from the abdominal signs and the frequency and character of the labor pains to make vaginal examinations unnecessary, as they fear the possibility of infection. Although admitting that indiscriminate and frequent vaginal examinations are to be condemned, I believe that many of us are not satisfied as to the position, the flexion of the head, its descent, the degree of molding, and the consistency and dilation of the cervix unless a vaginal examination is made not only early in labor, but also later, when occasion arises. Even then one is not always sure of the state of affairs. Take, for example, cases where there is a very thick caput succedaneum, an accessory suture, a Wormian bone, or a false fontanelle just in front of the posterior fontanelle. Under such conditions, we are often not only justified but compelled to do more than to make a simple vaginal examination. We must carry the hand into the vagina and up into the uterus before we can make a positive diagnosis preparatory to instituting the correct measures to facilitate or to terminate a protracted labor.

As prophylactic measures in the management of occipitoposterior cases, postural treatment and external manipulations either before or at the beginning of labor can be tried, but how much success will be achieved by these methods is very uncertain. Nevertheless, we ought to take advantage of them, for nature often only needs the slightest aid to work wonders. The correction of the malposition may be aided by keeping the patient on her feet by moderate out-of-door walks before labor and about the room during the first stage of labor. I also believe that small doses of quinine and strychnine, either used singly or in combination, for one to three weeks before labor, or during the first stage, may act as auxiliaries by strengthening the pains.

Before anyone undertakes the operative delivery of an occipitoposterior position, he should make himself thoroughly familiar with the normal mechanism. He should not be alarmed simply because he has such a position to deal with, since a large percentage, some observers say as high as 90 per cent. rotate anteriorly spontaneously.

In order that this anterior rotation may occur a number of conditions must be fulfilled: (*a*) The head must not be too large for the pelvis, nor the pelvis too small for the head; (*b*) the flexion must be good; (*c*) the pelvic floor must be resistant; (*d*) the uterine contractions must be strong.

I believe that a lack of this last condition is probably the most frequent cause for interference. The age of primiparity to-day is raised to a high average (thirty years or thereabouts), the high nervous tension of our city woman with her "hothouse" bringing up, and her inability to endure pain, together with the lack of self-control under it, demanding the early administration of chloroform, all tend to lessen our principal force—that of expulsion. The uterine contractions have a great deal to do in a posterior position. The head must be often molded into and through the brim, must be flexed, must be forced down to the pelvic floor, must be rotated through three-eighths of a circle; must be remolded through the outlet, and finally forced over the perineum. If the contractions are weak and inefficient these steps may not occur, and the accoucheur may be compelled to step in at any time.

Let us take the cases when we are called upon to assist either for the sake of the mother or child.

1. *An Occipitoposterior Position Above the Pelvic Brim.*—Before going into details as to the management of these cases, I wish to issue a warning against too early interference. I have seen many cases brought into the Sloane Hospital where forceps had been tried outside and failed, but where, a little more time having elapsed, as in transit in the ambulance, the head has engaged or descended well into the pelvis or rotated, so that labor has terminated spontaneously or with but slight assistance.

If the head is movable and high, the accoucheur must duly weigh all the conditions before he decides what to do. The plan of treatment which I would recommend when the pelvis is normal is as follows: Get first as complete a dilatation of the cervix as possible, then under deep anesthesia carry the hand into the uterus and manually rotate the occiput anterior. This can often be accomplished if the lower uterine zone is not retracted about the child. Then holding the head in position by the hand inside the uterus, and aided by an assistant making strong pressure on the fundus, apply the forceps to the sides of the head.

Often this anterior rotation will be brought

about in another way. By introducing both of the blades of the forceps posteriorly, one over the other, and in rotating them for a pelvic application, the head will rotate also, and the application will be cephalic as well. Rotation of the head by means of the forceps above the brim using force, however, is fraught with great danger to the mother and most often results in failure.

If, after rotating the head, and using moderate traction with the forceps, the head does not descend, or if the pelvis is found to be flattened, version would probably be the better operation, safer for both mother and child.

The cases which are the most trying are those where there has been a dry labor and the lower uterine segment is tightly contracted about the head. Here manual rotation is impossible and version absolutely contraindicated for fear of rupturing the uterus. These cases demand a patient and prolonged effort with the forceps, carefully watching the condition of the child. What must we do? We must drag the head through the brim and down to the pelvic floor in its posterior position before nature will help us, or before we can assist the rotation. The blades do not fit the head, the hold is insecure, and no matter what kind of a forceps is used there is a tendency to slip, especially when a fair amount of force is employed. One blade, if the position is R.O.P., holds only by the tip against the right side of the forehead, and the other blade grasps the left side of the occiput by its anterior edge. Consequently, to prevent this slipping, one must of necessity crowd the blades together, and so unduly compress the head. Again, even if we use axis traction forceps, there is considerable resistance on the part of the symphysis, the part of the head in front of the coronal suture impinging against it, and it necessarily follows that, when great force is required, this soft part of the skull is pushed up and intracranial lesions may result, so that the child is often born dead or dies in a few days. A symphyseotomy, or better, a Cæsarean section, would be the only method of getting it out alive in such cases, but we are unwilling at the outset to propose this operation without giving forceps a trial. Then it is too late. In some of the cases in which the child dies in attempting forceps, or is *in extremis* when we are called upon to deliver, craniotomy will become necessary.

2. The second group includes those cases where the head is engaged in the superior strait or is in the midpelvis. Sometimes the manipulation of pushing up the forehead and thereby increasing the flexion will allow the occiput to come down low enough during a pain to meet the resistance of the pelvic floor, and so start the rotation in this class.

When, however, the forceps is indicated, often under complete anesthesia, if the head is not wedged into the pelvis, in introducing both blades posteriorly the head will rise above the brim and, upon applying the blades, it will rotate with them, so that the posterior position is at once overcome and the forceps grasps the head cephalically. If the head is practically impacted in the pelvis, the blades must be applied to the sides of the pelvis. Usually, as the occiput strikes the pelvic floor, it rotates anteriorly spontaneously, or we can assist the rotation with the forceps by readjusting the blades from time to time with each advance until the occiput is anterior. This is especially the case when solid blades are used. There are a few cases, however, in which rotation will have to be effected as described in the next class.

3. This class includes the largest proportion of cases where the head is at the pelvic outlet with occipitoposterior. We ought not to think simply because of this abnormal position that all cases should at once be corrected. The great majority rotate spontaneously. Many others can be allowed to come through with the occiput behind, for although the prognosis for the child is supposedly worse and a larger anteroposterior diameter of the head comes over the perineum, serious damage is very rarely done. To illustrate, out of 104 persistent occipitoposterior positions in 5,000 deliveries at the Sloane Maternity Hospital, 55 were allowed to be born with the occiput behind, and only in four cases was the perineum slightly torn. Nine of these happened to be primiparæ, with fairly firm perineal bodies. Not that I recommend this to be the usual treatment in private practice. I simply wish to show that the outlook is not so bad after all when anterior rotation fails to occur.

Many cases can be manually turned with ease. Twenty-seven out of the remaining 44 cases in the above series were successfully treated in this way, although in four uterine inertia made the application of forceps necessary after anterior rotation had been effected.

How, then, shall we use the forceps when necessary?

In four ways: (*a*) Most cases will rotate while the blades, having been first introduced posteriorly one over the other, are being rotated for a pelvic or cephalic application as if the head were in an L.O.A. or an R.O.A. position. (*b*) Others can be rotated, using the first blades as a vectis, the left blade in an L.O.P. position, and the right blade in an R.O.P. position. Then introducing the second blade laterally for a cephalic application, one can hold the occiput in front and deliver in the usual way. This same method will apply to L.O.T. or R.O.T. cases—that is, where the occiput is caught half-way around and the flexion is poor. (*c*) In this set of cases the forceps is applied to the sides of the pelvis. After a few tractions the head either starts to rotate and we help it along a little, or we inaugurate the rotation with the forceps. With each advance we readjust the blades without removing them. The occiput gradually turns so that the sagittal suture is transverse, then the occiput passes beyond the transverse line and finally, as the head comes out under the pubic arch, it assumes a directly anterior position and is easily delivered. (*d*) There are a few cases, however, which we see now and then in hospital practice where the

head is wedged in the pelvic outlet, so that the above procedures will not succeed, and where a slight amount of force is necessary to obtain anterior rotation.

Some authorities recommend the straight-bladed forceps. Others use the ordinary forceps but with the pelvic curve reversed. By the former method we are rarely successful, and by the latter we run too much risk of injuring the mother's soft parts. The correct way to handle these cases when the first three methods fail is as follows: If the case is an R.O.P. position, regard it primarily as an L.O.A. position, and then introduce the blades in the usual manner, applying them to the sides of the child's head. Next, without force, carry the handles of the forceps to the left thigh of the patient. By this maneuver the flexion is increased and the tips of the blades are in the middle of the pelvic canal. Then, with little force, swing the handles downward, describing an arc of a circle. The head turns to an R.O.T. position first, and then, as the handles complete the arc, carrying them as far posteriorly as the perineum will allow, the occiput gets under the pubic arch. In this way the tips of the blades are still in the axis of the pelvic canal, not doing any harm. Now hold the head in position for two or three pains, with the pelvic curve of the forceps inverted, but using no traction. This is done to prevent the head from returning to its former position, and in order to allow the body of the child to rotate anteriorly to accommodate itself to the head. After we are sure the occiput will stay in front remove the blades. Many of the cases will now terminate spontaneously. If there is still delay, the forceps can be reapplied, and the delivery accomplished with ease. When one examines this method carefully, he will find that it is not so dangerous as he imagines, although it should only be used by a man skilled in the use of forceps. The neck of the child is not twisted beyond what it can safely stand, because the body will likewise rotate. The force used is not necessarily great, nor are the mother's soft parts injured if proper care is employed.

The Tucker-McLane solid-bladed forceps is the best variety for use in all the above methods, not only on account of the facility of introduction, application, rotation and removal, but also because they mark the child less.

In conclusion, let me say that the last method is not often necessary. It has been known at the Sloane Maternity Hospital for at least nine or ten years, yet in 104 persistent occipitoposterior positions in the series of 5,000 cases there, above mentioned, it was practised only seven times.

In my private practice, out of nine posterior positions with the head *low down* in the pelvis, needing assistance by the forceps, all were easily rotated anteriorly by the first three methods just described.

At the Sloane Maternity Hospital, in 1,000 vertex cases (8,000 to 9,098), 109 were R.O.P. positions; 85 were L.O.P. positions; 131 were R.O.T. positions; 210 were L.O.T. positions.

Of these 1,000 cases 523 were admitted in labor. Of the L.O.T. and R.O.T. positions 183 were admitted in labor.

In 5,000 cases (6,000 to 11,000), 104 were persistent occipitoposterior positions.

Fifty-five were allowed to be born occipitoposterior, but only in four was the perineum slightly torn, though nine were primiparæ; one child died, not counting the non-viable and very premature cases up to 7½ months.

Twenty-seven were rotated manually, and in four of these the forceps was subsequently applied; one perineum was torn and one child died; nine were primiparæ.

Nineteen were rotated by forceps, but only seven by the reapplication method; two were rotated using forceps as a vectis; three perinea were torn; five children died; 16 were primiparæ.

One child already dead—delivery by craniotomy.

Total deaths, children, eight (counting craniotomy case).

Total perineal tears, eight.

Private practice: In 100 vertex cases 27 were R.O.P.; 8 L.O.P.; 15 L.O.T.; 6 R.O.T.

1. Of the occipitoposterior remaining persistent above, at or in the brim, five required high forceps, two justo-minor pelves, two flat pelves. All of them rotated anteriorly on applying the blades.

2. At midpelvis, or just below: three required forceps, all rotated anteriorly in applying the blades.

3. At outlet: Two were rotated manually and then were born spontaneously; three were rotated manually and then the forceps was used; five rotated in applying or readjusting the blades; one rotated using one blade as vectis; six after normal rotation required the forceps. There were no deaths of children. There were six moderately torn perinea in the above forceps cases. (Two tears were due to rapid delivery to save the child.)

SCURVY IN INFANTS.[1]

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I HAVE recently seen in consultation two very similar cases of disease in infants; yet in each case the physician in charge frankly stated that the symptoms were new to him, and that he did not know how to interpret them. Having seen a number of such cases before, and feeling sure that the condition is a not uncommon one, I am prompted to call the attention of the profession once more to scurvy as it occurs in infants. My recent cases were as follows:

Case I.—Seen in consultation in Menlo Park, January 9, 1904; a male infant, aged eight months. For several weeks the baby's appetite had been failing and he had been growing more

[1] Read before the California Academy of Medicine.

and more restless and sleepless. Several times during these weeks his napkin had been stained with blood passed with the urine. Recently great tenderness had been noticed about both lower limbs, so that he screamed when raised or handled, or especially when his limbs were elevated to change his napkin. Finally, a few days previous to my visit it was observed that the gums about his two upper incisor teeth were swollen so as to nearly hide the teeth, were dark purple in color and bled when touched.

Case II.—Seen in consultation in Alameda, February 3, 1904; a male infant, aged thirteen months. This baby, so the mother said, cried violently whenever his legs were moved, as in putting on his shoes and stockings or changing his napkin; and had done so for eight or ten weeks before I saw him. He had gradually grown worse in this regard, so that now he would no longer sit up and could not lie in any position for any length of time without crying from pain. The mother knew of no cause, and the baby had been treated for a long time for rheumatism. He screamed violently when his legs were examined; both were found swollen from the knees down, markedly about the ankles and feet. The baby was found to have four teeth—two upper and two lower incisors; the gums about these were much swollen, so that the teeth were nearly hidden, were dark purple in color and bled when touched.

In each of these cases the symptoms meant scurvy and could mean nothing else. I observed my first case of this sort in July, 1895, and reported it in the MEDICAL NEWS, February 29, 1896, this case being, so far as I am aware, the first one reported from the Pacific Coast. Subsequently a collective investigation of the subject was made by the American Pediatric Society at its annual meeting in 1898; and to this report I contributed the history of three cases observed to that date. Including the two cases herewith reported, I have now seen ten cases of scurvy in infants.

Etiology.—The disease occurs mainly during the first year of life. It seems to be dependent in some way upon the food given; but it occurs in infants fed on many different kinds of foods, and does not occur in all infants fed on such foods. Most often infants who develop scurvy are taking some one of the proprietary foods. In my own cases, Mellin's food, Eskay's food, Horlick's malted milk and condensed milk have been the foods taken at the time the scurvy developed. But I have the records of many other infants fed on exactly similar formulæ, who never developed any sign of scurvy. No one has ever satisfactorily explained how the diet causes the symptoms, or what the substance is that by its presence in or absence from the diet might lead to the pathological changes observed. In other words, the exact cause of scurvy in infants is still unknown.

Symptoms.—These are quite characteristic and diagnostic. The most important are (1) *pain on movement of the lower limbs;* such movement, whether voluntary or due to handling, causes the infant to scream with pain; as a consequence the limbs are not used and they appear paralyzed; frequently, but not necessarily, the thighs or legs are swollen and brawny to the touch; more often along the shaft of the bone than at the joint. All of these symptoms are due to a greater or less degree of subperiosteal hemorrhage. (2) *Purple swollen gums.* This symptom occurs most often in infants that have teeth through the gum or about to appear, and involves only the gum about such teeth. It has been observed in gums that had no teeth through them; but not so often. The gum is so swollen as almost to bury the teeth, is usually dark purple, almost black in color, is spongy and softened and bleeds easily. (3) *Subcutaneous hemorrhages.* These resemble bruises or "black and blue" marks. In the first case I ever saw, in 1895, the infant had a typical "black eye." In another there was a large purple area over the buttock and thigh as if the baby had been beaten. Such spots may appear in any part of the body, and usually take the form of good-sized patches rather than of diffusely scattered purpuric spots. (4) *Hemorrhage from mucous membranes.* This may be from the mouth or throat; from the nose; from the bowel; or from the bladder—bloody urine had been one of the alarming symptoms in Case I, herewith reported. (5) *Anemia and Malnutrition* are usually complicating conditions, but in no way peculiar to scurvy.

Diagnosis.—Given an infant six months to a year old; a history that the legs are tender and the baby screams when they are moved—scurvy is always the most likely explanation. If on examination the gums are found swollen, discolored and bleeding; or if black and blue marks are discovered or have previously been seen by the mother on the baby's body, the diagnosis may be made with almost absolute certainty, especially if the infant is and has been for some time fed on one of the proprietary foods.

Differential Diagnosis.—The most frequent mistake made is to call the case *rheumatism.* It cannot be impressed too often or too strongly that young infants do not have rheumatism—at least it is so extremely rare that practically it may be left out of account; while scurvy, on the contrary, is not at all an uncommon ailment in the first year of life. The disinclination of the infant to use the limbs now and then leads to an erroneous diagnosis of *paralysis;* but paralysis never gives rise to pain and tenderness of the limbs as scurvy does; an examination will show that the loss of power is apparent rather than real. The condition of the gums described should always make the observer suspicious of scurvy; but I have once seen a case where the gums had been lanced, because their swollen, purple state was supposed to be due to difficult dentition. It is rare to see purpura hemorrhagica in the first year of life and no matter how many hemorrhages have occurred into the subcutaneous tissues and from mucous membranes, scurvy is always the more

likely cause in a young infant; besides the symptoms in limbs and gums are almost invariably coincident and complete the picture. Finally, an *injury* to the limb is often suspected, but rarely occurs in such young infants; for they cannot walk and have so little opportunity for traumatism.

Prognosis.—Scurvy is a disease in which proper treatment works a miracle. It has no tendency to spontaneous recovery; but when recognized and given the proper care, improvement is immediate and cure is surprisingly rapid. No other disease affords the physician a better prospect for brilliant results.

Treatment.—Just three measures are indicated for the cure of scurvy: (1) Discontinue the proprietary food. Substitute for it a mixture of fresh milk diluted with water or with oatmeal water. (2) Give fresh orange juice, in dose of one or two teaspoonfuls three times a day. It is surprising how babies with scurvy take to this and seem to enjoy it. (3) Give freshly expressed beef-juice, squeezed from rare steak, in dose of one or two teaspoonfuls three times a day. (4) Give no drugs at all.

All of my cases have been treated in this simple way. In Case I, herewith reported, every symptom had vanished in four days after treatment as above. In Case II, after ten weeks of suffering the baby was absolutely well in one week. The recognition of scurvy is easy when only we realize that such a disease exists; the treatment is so simple that we feel almost ashamed to take the credit for the good it accomplishes; and the change we are able to effect at once in a disturbed and discouraged household is so magical that scurvy in infants becomes really the most fortunate disease the physician can ever hope to meet.

MEDICAL PROGRESS.

MEDICINE.

Diminution of Liver Dulness.—It is now well recognized that diminution or even absence of liver dulness is not a reliable sign of the pressure of free gas in the peritoneal cavity. S. V. Pearson (Med. Chron., March, 1904) has carefully examined 140 cases of ulcer of the stomach and finds that 33 per cent. of that number have shown a considerable decrease in the liver dulness at some time during their stay in the hospital. In none had perforation occurred. He does not believe that cases of gastric ulcer are particularly more liable to show this decrease in dulness than other diseases. This number did not include any in which the decrease was due to emphysema or other lung conditions nor any in which the diminution was at all ambiguous. Complete absence of dulness was present in three or four cases of simple gastric ulcer. The explanation of this phenomenon is not at all clear. It is not associated with any marked degree of distention, nor with pain or tenderness. It has been suggested that this condition was due to a distended gut getting up in front of or behind the liver, marking the normal dulness or actually pressing the liver upward. It has been found that the great majority of cases are in young females, and this is the case, no matter what the nature of the associated disease. This marked decrease in dulness also frequently occurs very commonly at the time of the monthly period whether it be associated with pain or not. Again, the amount of food in the stomach may have some influence, but the complete explanation of the condition is by no means satisfactory.

Diazo and Widal Reactions in Typhoid Fever.—It requires a wide experience and careful observations to determine the true value of many of our clinical tests, and, therefore, a great diversity of opinions still exists in regard to the importance of positive results in the above tests. C. B. Ker (Practitioner, March, 1904) believes that the diazo-reaction of Ehrlich may be of considerable assistance in the diagnosis of typhoid because it is usually present from the fourth to the sixth day, when many of the other signs are still absent. It is, however, usually present in several other diseases, being almost invariably present during the eruptive stage of measles, but this is, of course, of very little importance. It seems to be always present in typhus and is usually found in miliary tuberculosis. It is occasionally present in lobar pneumonia and more rarely in bronchopneumonia. The value of the test is rather its absence than its presence. A case of continued fever which does not give the reaction between the sixth and twelfth days is in all probability not enteric fever. On the other hand, if it is present, it is necessary to exclude the eruptive fevers, miliary tuberculosis and pneumonia. In regard to the Widal reaction there are still a great many physicians who seem somewhat skeptical concerning the dependence which should be placed upon the significance of its presence. No doubt the reason for this is that the results which are frequently obtained follow methods which are not sufficiently skilful and careful. It requires a great deal of painstaking work by an experienced man to obtain valuable results. The author uses a dilution of one to thirty, but most authorities now consider the reaction positive only when dilutions of one to fifty are used. It may now be safely said that a positive reaction means that the patient has enteric fever at the moment or else has suffered from it previously. A negative reaction during the first two weeks means little or nothing. If it is still negative in the third week there is a strong presumption against typhoid and if it remains negative in the fourth week the idea of typhoid may be dismissed.

Hypodermoclysis in Pneumonia.—In spite of all the innovations which have been made in the treatment of pneumonia the death rate has been very little changed during the past three or four decades. Statistics, however, in such a disease as pneumonia, in which so much depends upon the age, the previous habits and condition of the patient and the "genus epidemicus" are not only not infallible but often misleading. F. P. Henry (Med. Chron., Feb., 1904) who was the first to use hypodermoclysis in the treatment of pneumonia, believes that it is theoretically indicated in every case of pneumonia although he does not employ it in many mild cases. It dilutes toxins and favors their elimination; it preserves the alkalinity of the blood, which is one of the most important properties of the vital fluid and, finally, certainly tends to prevent the formation of heart clot, which the writer believes to be a frequent cause of death in pneumonia. The solution employed contains 50 grains of sodium chloride to the pint of distilled and sterilized water. He uses a large syringe or chest aspirator, the action being reversed, and injects from eight ounces to a pint once a day.

Tardy Abscess of the Liver.—Attention is called to the fact that tropical dysentery may be followed by hepatic abscesses a long time after the latter has sub-

sided, by P. K. Pel (Berl. klin. Woch., April 4, 1904). He reports three cases where the lesion came on at varying periods from eleven to twenty years after the dysentery had cured and after periods of good health. There was no other cause apparent for the production of such an abscess except the former attack of dysentery and idiopathic abscesses are extremely rare. The author thinks that encapsulation of some small pus focus had taken place, which had remained quiescent for years, but that at the periphery a certain number of microbes had remained alive. Such encapsulation has been proved in the case of typhoid bacilli, where in one instance they were found encapsulated in a focus in the tibia fifteen years after recovery from typhoid.

Toxic Agent of Cholemia.—Icteric patients sometimes develop an alarming series of cerebral symptoms which usually end in coma and death. The direct cause has frequently been a matter of speculation and it is as yet undecided whether the bile pigments, bile acids or the loss of hepatic function are at fault. A. Landau (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 5 and 6) noticed a close resemblance to diabetic coma and concluded that the whole condition is an acid intoxication. The common bile duct was ligated in a number of rabbits and the blood titrated every day until death, which generally occurred on the fifth or sixth day. The alkalinity gradually diminished day by day, but not to a sufficient degree to account for the symptoms on the basis of an acid intoxication. The amount of carbon dioxide was also found considerably below normal. Since animals with much less alkali have been known to live for days, probably other facts bring on the fatal issue.

The Value of the Phonendoscope.—The improved phonendoscope has been thoroughly tested by D. Sehrwald (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 5 and 6), and found by him to possess no advantages over the ordinary stethoscope. As resonator it can only magnify one particular sound, while all the others are diminished in intensity or suppressed altogether. The complex sounds of the heart and lungs are thus reproduced very imperfectly, and their character considerably altered. Even the use of the valve on the resonator does not improve matters, for if opened, the resonator will lose its property as sounding board and fail in transmitting low sounds. Moisture and hairs interfere considerably. In employing the phonendoscope for auscultatory percussion, one generally obtains oval or circular figures, whose size does not depend upon the organs percussed but chiefly upon the moisture and tension of the skin. A heart-shaped figure can thus be percussed after the heart is removed from the thorax and in other places remote from the heart. The common stethoscope does not give such loud sounds, but is much more satisfactory.

Diagnosis of Gouty Deposits in the Ears.—W. Ebstein (Deutsch. Arch. f. klin. Med., Vol. 80, Nos. 1 and 2) finds that in patients suffering from gout or rheumatism, nodules are occasionally discovered in the auricle, which at first sight impress one as tophi, yet are situated in the cartilage and do not contain urates. They are sometimes cysts, sometimes cartilaginous excrescences and, though occurring most often in gouty individuals, do not justify the diagnosis of gout with the same certainty as in the case of uratic deposits.

SURGERY.

Anesthesia in Abdominal Surgery.—When we come to the selection of anesthesia in celiotomy, it will, in the majority of cases, be one between ether pure, with nitrous oxide, with oxygen or chloroform, but J. J. G. Williams (Am. Jour. of Obstet., March, 1904) thinks that by most operators ether alone will be chosen. Spinal anesthesia with cocaine has been tried and found wanting. The author gives the following reasons for preferring ether: (1) It is nearly always possible to procure a fresh supply. This is not true of chloroform. (2) Ether is safer, there being one death in 10,000 cases, while chloroform gives a mortality of one in 2,000 administrations. (3) The patient can be placed under ether nearly and quite as quickly and quietly as with chloroform. (4) With ether one can keep the patient pretty much in the stages desired; with chloroform, the author has seen them go quickly from sensation of pain to deep narcosis. (5) When one is compelled to place the anesthesia in the hands of a layman or, as has frequently been done, the domestic servant, ether is safer. Chloroform is likely to kill early, during the first few inspirations or when struggling occurs. (6) When organic heart disease is present, ether, for a time, stimulates the heart. (7) Ether has been administered to alcoholics, those with pulmonary tuberculosis and with pathological kidneys, and in these cases it is as safe as any general anesthetic, if not safer. When the patient has been anesthetized, there are two methods of continuing the administration during the operation: (1) The anesthetic may be given by dropping one-half to one dram over the nose-tip every minute or so. (2) Use the "drop method" as in giving chloroform, allowing one drop to slowly follow another. Always withdraw the anesthetic when tapping a large cyst or ascites, and when removing bulky fibroids, keep it withdrawn until the patient shows signs of returning consciousness.

Subsequent History of Gall-bladder Cases.—Question blanks were sent to the last 350 cases of gall-bladder disease operated by H. Kehr (Münch. med. Woch., April 5, 1904), exclusive of carcinoma, to determine the results and after-effects of the operation. Most valuable statistics were obtained, which prove that the relief is generally permanent and the danger slight, with increased experience. Thus stones were left behind in only 2.5 per cent., but the operator was aware of this in more than half, where the relation of the biliary ducts was so complicated that a radical procedure could not be restorted to. Most of the others passed the stones spontaneously and are free from symptoms, and only one case necessitated a second operation. In 350 cases only one mucous and one biliary fistula remained behind and herniæ were encountered in only 11, where extensive suppuration required an elaborate tamponade. Colic, due to adhesions, was observed twelve times, due to inflammation five times; in these 17 cases the appendix was removed five times, in three a pyloroplastic and in two a gastroenterostomy was performed and one suffered from hepatoptosis. Care must be taken not to mistake subsequent renal colic for recurrent biliary pain, since both conditions may exist together.

Gangrene of the Hollow Viscera.—Mesenteric thrombosis, while rare, has been referred to by numerous authors. Nevertheless, like many other obscure abdominal conditions, there is certainty that its presence has been overlooked in many cases and that it is much more frequent than usually supposed. Roswell Park (Ann. of Surg., April, 1904) calls attention to the most significant symptoms. They are as follows: (1) Sudden onset. The pain begins instantly and is apt to be overwhelming in its character. It cannot be quieted by an ordinary opiate. There are, however, cases which have run their course without any appreciable pain. (2) Diarrhea. This is usually an early symptom, evacuations being profuse and often bloody. (3) Obstructive symptoms. These are sometimes those of the ileus, sometimes of constipation. (4) Vomiting. This usually occurs early, the material being bloody and early fecal. (5) Rapid pulse. This may run as high as 140. (7) Subnormal temperature. (7) Meteorism. (8) Ab-

dominal rigidity. It is said that when the inferior mesenteric artery is involved, tenesmus becomes a prominent characteristic. A differential diagnosis has first to be made between the perforating ulcer of the stomach or duodenum; 15 per cent. of gastric ulcers perforate. Second, acute obstruction. This includes all rarer forms of internal hernia. Third, pancreatitis. This may very closely simulate mesenteric inclusion, the suddenness of the disease in the latter case being the only distinguishing feature. Fourth, acute splenic infarct. This is naturally a difficult condition to differentiate from obstruction to one of the mesenteric vessels, because it is usually caused by embolism of the splenic artery. Fifth, acute appendicitis. In every detail except in degree, acute appendicitis simulates the greater disease under consideration. Sixth, acute cholecystitis. Here there is usually a history of previous disease of gall-stone colic. Seventh, extra-uterine pregnancy. Eighth, intrathoracic lesions; left-sided pneumonia is one of these. The only recorded case of mesentery exclusion not proving fatal is recorded by Chiene. The branches of the mesenteric arteries were found filled with the injecting fluid of the dissecting room, their main trunks, however, were blocked by an old embolic process. The blood reached the mesenterics through the left and middle colic vessels. These cases seem to be beyond the realm of hope even if the very earliest surgical attention be given them. Nevertheless, in view of the extraordinary length of gut which has been successfully resected, there may be cases of mesenteric embolism of a mild degree which can be saved by early intervention. At all events, no time should be wasted in speculation as to the character of the lesion, it being evident that no such case as would be lost without an operation would be lost in consequence of it. Of these cases, as of most others in the hands of competent men, it should be said that they die in spite of operation, not because of it.

Diagnosis of Frontal Sinus Osteoma by the X-Rays.—The difficulties attendant upon the diagnosis of this condition ought to be simplified by the employment of the Roentgen rays, but thus far no skiographs of the lesion have been published. G. Perthes (Archiv f. klin. Chir., Vol. 72, No. 4) reports a case where the X-rays proved to be of the greatest importance both as regards the diagnosis and the determination of the site of operation. By the removal of the growth, the malposition of the left eye was corrected, the headaches and other symptoms disappeared. Without the rays it would have been impossible to recognize the presence of a bony tumor on the roof of the orbit, which was displacing the bulb. No elevation could be detected on the forehead and the tumor might as well have been an exostosis. The skiagraph taken in two planes showed that the growth extended 4 cm. above the roof of the orbit and beyond the median line to the other side.

Thrombosis of Superior Mesenteric Artery.—An interesting case of thrombosis of the superior mesenteric artery, in which an early operation was done without, at that time, a full knowledge of the cause of the trouble, is reported by H. G. Mumm (Interstate Med. Jour., April, 1904). As in almost all instances of this condition, the case presented the signs and symptoms of acute intestinal obstruction and the operation was done to relieve it. No obstruction, however, was found and the small intestine showed a rather marked congestion and in some places there was a particularly tight, tonic, muscular contraction present, rendering the caliber of the small intestine extremely narrow. This contraction would involve several inches in length of the intestine in various portions with intervening parts of the gut normal. Then the contracted portion would relax and the tonic spasm of the muscular wall occur in other parts, not traveling in continuity. After the operation, gas and feces were expelled by rectum but the constitutional symptoms and signs grew worse and he died in four days. Autopsy showed a gangrene which began just below the duodenum and extended throughout the small intestine and involved the cecum and about one-half the transverse colon. The superior mesenteric artery was found closed by a thrombus which began about one-half inch from its origin from the aorta. The other abdominal organs showed no important changes. No sufficient cause could be established for the thrombosis in this case, for the man was only thirty-six years old; there was no history of syphilis, no heart lesion, no atheroma, no embolus elsewhere. A slight twist of the mesentery upon itself was, however, found, and it is possible that sufficient injury occurred from it to determine the site of the beginning thrombosis. The author is inclined to the belief that many of the so-called cases of embolism are really instances of thrombosis, probably due to some distinct injury.

Surgical Treatment of Goiter.—A large number of parenchymatous goiters, successfully treated during the past fifteen years by a combination of internal and external methods, are reported by C. H. Mayo (Jour. Am. Med. Ass'n, April 23, 1904). He also has operated on 110 cases for the relief of some type of thyroid tumor. Of these, 34 were for exophthalmic goiter, with six deaths. He prefers the Kocher collar incision as giving the greatest exposure and the least scar. He precedes anesthesia with morphia subcutaneously and uses ether by the drop method, unless there is extreme dyspnea or marked exophthalmic symptoms. In such cases he uses cocaine by injection. The exophthalmic cases which recovered from the operation were all benefited within three months; in only 25 per cent. was the improvement partial, the exophthalmos being slow to disappear. None of those who lived were made worse and those in whom death occurred were the most severe types of Graves' disease, with tachycardia of from 130 to 150.

The Appendix and Typhoid.—The prophylaxis in perforative peritonitis from typhoid fever is the pivot on which every effort in treatment should revolve, until either the cause is removed or accuracy in diagnosis has enabled the clinician to recognize the perforative stage, as prompt interference after perforation has taken place has evidenced any marked lowering in the mortality table. The appendix is the seat of perforation in about five per cent. of all cases, and L. J. Hammond (Jour. Am. Med. Ass'n, April 16, 1904) claims that in addition to this there is a large number of cases occurring in the ileum and ascending colon that can be directly traced to preexisting disease of the appendix. In support of this he reports two cases, where the tension from bands of adhesions between the appendix and other parts of the gut caused rents in the ulcerated patches. He believes that where the appendix has been the seat of a previous inflammation a disease like typhoid is sure to light up a recurrence. With this in mind, when a case of typhoid fever presents among its earliest symptoms pain to the right of the hypogastric region, with tenderness, nausea or vomiting, aching or discomfort in the groin, anorexia, and lastly, rigidity of the right rectus, a relighting up of a previous disease should be suspected, for it is now known that the right iliac fossa is not tender during the early days of typhoid, before the bacilli have been deposited in the Peyer's patches. Immediate laparotomy should then be done, removing not only the appendix, but also the agglutinated coils of the ileum, which thus has its nutrition impaired and consequently its structural resistance is diminished.

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"LEAD, KINDLY LIGHT."

BROOKLYN, which has hitherto been celebrated principally for its churches and its bridge connection with what it fondly regards as its suburbs, has now come out in a new rôle, and seems to have developed into a place where they "find out things." Their last discovery, and one which will be of greater service to their neighbors perhaps than to themselves, is the rather startling fact, that artificial teeth, made of porcelain, are a certain and reliable protection against sudden death, due to poisoning from the inhalation of illuminating gas.

Now, whatever may be charged to the account of the inhabitants of Brooklyn, they are certainly not, as a class, addicted to the playful and labor-saving habit of "blowing out the gas," and the guileless and unsophisticated stranger who has money to burn, is much more apt to consume it in feeding the flame of some red lamp on the altar of a New York dive, on a Saturday night, than he is to drop it with an unshaking hand into the contribution box of a Brooklyn church on Sunday morning. Actuated, it would seem, by a realization of this fact, and doubtless influenced by the belief that short credits make long friendships, the authorities of the gas companies of Brooklyn have evolved from their inner consciousness a system which, while it may bring peace to the treasurer, certainly passeth all understanding of other communities. For these gas magnates take no chances. With one fell swoop they have done away with bills and the difficulties of their collection, and have eliminated all meters from the equation of their business enterprises. In place of them they have set up an automatic fountain head, a thing of cogs and balances, that acts upon the introduction of a silver quarter of a dollar as does the more humble slot machine, when the insertion of a nickel throws down a bar of stored muscular energy in the shape of chewing gum, or, like Helen's babies, "makes the wheels go round."

These mechanical devices are not only useful, but are highly ornate, and are calculated to make any home, uninhabited by the color-blind, happy. For the directions "Drop a quarter in the slot and secure your gas supply," which are tastefully enameled in various chromatic schemes on their convex fronts, not only proclaim the touch of the modern impressionist, but are as direct, and as easily understood as the inscription painted by some wag on the lodge of the Indians in the vast wilderness of the Wild West Show: "Throw a brick into the tent and see the Indian come out." All this is easy and plain sailing for the company, and would be simple enough for the consumer, if each apartment had a separate and individual connection with the gas supply, but when the machine in one room turns on the gas in the rest, so that one man's meat becomes another man's poison, the complications are apt to be dangerous, to say the least.

The first victim to the grasping greed of this monopoly seems to have been a certain Dr. Westfall, who, returning late to his room in his boarding house, lighted a match, and applying it to the gas burner, suddenly realized that he was in personal contact with a corporation that did not propose to let its light shine before men without adequate and guaranteed compensation. A hurried search through his clothes and belongings failed to discover a coin of the proper denomination, and as there were some five flights of stairs between the doctor and the outer world, and as the patent machine had not been perfected to a degree that would enable it to make change, he quietly undressed, and going to bed in the dark, was soon asleep.

Up to this time, according to the evidence, Dr. Westfall's course of action had been marked by the good sense and calm deliberation that is es-

sential to a professional man, not only in Brooklyn, but in other places. He did not have a silver quarter; there was no possibility of obtaining one from the neighboring shops, which were, of course, closed at midnight, so that, like "Little Ned who was sent to bed," he also, in our judgment, "acted right." His one mistake, however, was that he did not turn back the key after his futile endeavor to light the gas. Shortly after this a fellow lodger in another part of the house came in, and finding that his lamps, too, were untrimmed when the bridegroom came, he dropped the requisite coin and the gas immediately began to flow. It flowed, however, not only into his own room, but also into that of Dr. Westfall, and with the usual result. But the sleeping man awoke. Something had gotten into his throat and was strangling him, and it was only with the greatest difficulty that he reached the window and throwing it open screamed for help.

And now this gentleman from Brooklyn comes into the arena of controversy with a brand new theory, that porcelain teeth are a perfect safeguard against asphyxiation, and that no well-established victim of the gas-blowing habit should be without them. For he tells us, "escaping gas causes the unconscious sufferers to grind their teeth and says that in grinding his china molar was broken and that the fragments falling into his throat, awakened him." All this may be and probably is true, but we doubt if what Bret Harte described in the address to the pliocene skull as "a thrill of the maxilla and a lateral movement of the condyloid process" would be always sufficient to dislodge the results of modern, up-to-date dental substitution, as in some cases tooth would be undeniably stronger than friction. At all events, an ounce of prevention is worth a pound of cure, and it would have been easier and far cheaper in the end for the doctor to have coughed up the price of the gas than the fragments of his tooth, which must have been sharper even than having the proverbial thankless child.

As to the dispute between Dr. Westfall and the gas company, our sympathies are, in this case, with the corporation. We do not know what particular specialty Dr. Westfall is following, so, far be it from us to suggest that he may be a dental surgeon who is seeking to advertise the virtues of porcelain teeth as a protection for persons who blow out the gas. But reciprocity is the soul of mutual compacts, and as he gave no quarter to the company, he can expect none in return from them, their machines or anything that is theirs.

THE PATENT MEDICINE CURSE.

We have watched with no little interest the amount of attention that has been aroused in many quarters by the article of Mr. Bok, the editor of the *Ladies' Home Journal,* with regard to the patent medicine curse, which appeared in the May number of that monthly. Something over a year ago there was copied, with due acknowledgments, in one of the departments of the *Ladies' Home Journal,* a passage from the Byways of Medical Literature of the Medical News, in which it was shown that most of the patent medicines used in this country contain considerably more alcohol than beer or even wine, and that many of them compare not unfavorably in alcoholic strength with the ordinary whisky that is sold in saloons. Not long since a personal communication from Mr. Bok asked us for further information with regard to this subject, which, so far as it was possible, we supplied, calling attention particularly to the analyses published some years ago by the Massachusetts Board of Health. We have felt then that it was rather the proper thing for us, in view of the sensation that has ensued, to see what others would say before taking part in the interesting discussion.

We are overjoyed to note that Mr. Bok has hit straight from the shoulder, that his attitude has attracted widespread attention, and has led to comment on the part of most of the self-respecting journals throughout the country. Of course it cannot be expected that newspapers which derive a considerable portion of their advertising income from display announcements of these patent medicines will give any space or notice to a movement that is likely to diminish the receipts of their advertising departments. An independent journal like *Collier's,* for instance, speaks out fearlessly and says: "Mr. Bok appears with an article of which any journalist might be proud, attacking an outrage with truth and potency. The people who drink or eat patent medicine number millions. Some do it to save doctor's bills, others because they find the patent medicine more effective, since no reputable doctor would give in quantity and kind what the patent medicine contains. The law which forbids harmless oleomargarine to be used as butter does not prevent poisons containing from 20 to 45 per cent. of alcohol from being sold as non-alcoholic." *Collier's* adds, "The Women's Christian Temperance Union busies itself with such important matters as christening ships with wine. Life insurance

companies, more intelligent, have begun to ask their applicants whether they have a habit of using patent medicines." These preparations are popular in prohibition States.

As Mr. Bok very truthfully points out in his article in the *Ladies' Home Journal,* it is to a large extent the religious journals throughout the country that have been most flagrant in their readiness to accept patent medicine advertisements. He says, "Beside me, as I write, are issues of some twenty different religious weeklies, the advertising columns of which are a positive stench in the nostrils of self-respecting people." There is no doubt of the truth of this. Medical journals have called attention over and over again to the discrepancies between the lofty declarations of the editorial and other columns of the religious press, and the utter sordidness of the advertising columns. Almost anyone who has the money and who does not make an open profession of immorality, can get into the advertising columns, even of the highest class religious periodicals. This field has been considered one of the most lucrative by medical advisers generally.

We note that another phase of the medical advertising evil has also been brought before the public just at this time. A number of sketches of Mr. Hearst, one of the presidential possibilities, have recently appeared, and in answer to one of them Mr. Norman Hapgood wrote a typical editorial as it should appear in the Hearst papers, but will not. He says:

"To the billion readers in our Hearst family,—one word. Let them examine this paper. They will find over a page of advertisements by quack doctors, of a kind which reputable papers will not print. They will find masses of advertisements on patent medicines. One contains 44 per cent. of alcohol. One, advertised as 'safe,' contains over 35 per cent. We know they are poison. We aid and abet clairvoyants, palmists, astrologers and card-readers. Why do we carry all these schemes to cheat the poor? Did you ever study proportion? Neither has the poor savage of Australia; but we have, and our morality is determined by the ratio of cost to what we get out of it. As it is in these petty swindles, so is it in the larger bunco games of politics. We defend the poor when it pays. We cheat the poor when it pays. Think it over."

Both of these excellent hits at the evils of medical advertising have appeared in *Collier's,* and yet *Collier's* itself lends its columns for due remuneration (we wonder if, as is said to be the case with the religious press, the price for medical "ads" is higher than for any other advertising material) to medical advertisers who are likely to do just as much harm as ever did the alcoholic patent medicines. Every honest man now knows that medical advertising in the lay press is only for the purpose of exploiting poor sufferers whose ailments make them even less capable of proper judgment than before. The only position for a self-respecting managing editor to take is absolutely to refuse all such advertisements, no matter what the stipend offered for them. This Mr. Bok did some time ago with regard to the *Ladies' Home Journal,* and, as the result, has had the courage to take the next step of directly attacking the evil. If this example will be followed by other prominent journals there will be a distinct raising of the moral tone in editorial rooms generally throughout the country. Let us hope that the evolution is about to come. The medical profession should be ready to encourage it in every way and should note the papers that are striving to be honest in the midst of so much disgraceful sordidness.

SOCIETY OF SANITARY AND MORAL PROPHYLAXIS.

WHAT promises to be a most important movement in diminishing the spread of venereal diseases in this country—viz., the organization of a society of sanitary and moral prophylaxis—seems to be on the eve of successful accomplishment. This project has received the unanimous endorsement of the New York County Medical Society and the active cooperation of many influential members of the laity has been promised.

As set forth in the paper of Dr. Morrow, in the present issue of the MEDICAL NEWS, the prophylaxis of venereal diseases, from their peculiar nature and mode of propagation, is not purely a sanitary problem; it is essentially a sociological problem. To combat the evil there is required a union of all the social forces—medical, moral and legislative.

Any attempt to introduce the Continental system of regulation in this country has always encountered a strong hostility on the part of the moral element of society—but there can be no opposition to a movement which is chiefly along the lines of education of the rising generation in matters relative to the physiology and hygiene of the reproductive organs.

Readers of the MEDICAL NEWS may recall our full reports of the two International Congresses

for Sanitary and Moral Prophylaxis, held at Brussels within the past five years. The organizations which have evolved from these meetings have had a very marked success in European countries; the German society now numbering over four thousand members and the French society almost a thousand. Swiss, English, Dutch, Italian, and Russian branches are operative.

It is fitting that an American organization, in sympathy with the European movement and representative of the best elements not only in the medical profession but of the law, the clergy, and the layman should be launched at this time.

We can confidently hope for a permanent organization in the very near future.

REPORT OF THE ENGLISH CANCER RESEARCH FUND.

It has always been a characteristic of English science, and, indeed, of English thought in every field of human interest, that its greatest advances and its most noted triumphs have come not from the schools or the institutes, but from individuals working alone and independently. Herbert Spencer, Charles Darwin, Mill, Buckle, and innumerable other names attest the truth of an observation which is by no means new, yet always remarkable. In France, the Academy and the University of Paris have been the springs and sources of all progress; in Germany, it is hard to discover a famous name unadorned by the title of Professor or Director.

The establishment, therefore, of a special fund, of an institution, under the patronage of His Majesty the King and under the presidency of H.R.H. the Prince of Wales, for the investigation of the causes and nature of cancer, is an experiment which will be watched with much interest. It is of significance inasmuch as it takes official cognizance of the tremendous growth and the really serious national import of the disease. It is still further of significance inasmuch as it postulates that the problem is too vast to be entrusted to individual effort. These two considerations give abundant sanction to the establishment of the Foundation.

The first scientific report of the investigations of the Cancer Research Fund has just been published, and contains a résumé by Dr. E. F. Bashford of recent work in the laboratory. In consonance with the essential idea of the Fund, the work has been undertaken along extremely broad and extensive lines of research, comprising the zoological distribution, the transmissibility, and the comparative histological and cytological characters of malignant new growths. These are all large and fundamental problems, which necessitate the accumulation of a vast amount of material, of data, and of labor, and are eminently within the domain of such an institution, as contrasted with the problems accessible to the individual investigator. As might have been anticipated, the early results are suggestive, promising—but nothing more; indeed, to expect more would be entirely to underestimate, and mistake the nature of the issues.

It appears now to be a matter beyond dispute, that tumor formation is a condition which maintains not only among men, but among all forms of domesticated animals, and, as well, among wild vertebrates from the fish up. The only general factor which seems to influence its origin is the mature age of the victim. The tumors, as in man, derive their nature from the character of the parent tissue-cells, and are broadly divisible into the epiblastic and mesoblastic types. These data are of importance as revealing the action of some generalized etiological factor. It is evident that the immediate problem is to determine whether this be of a parasitic nature or not. Experiments in the transmissibility of tumor, therefore, form one of the most interesting and vital aspects of the work. It has long been known, from the investigations of Jensen and others, that malignant new growths are inoculable under certain circumstances from one animal to others of the same species. The conditions governing the success of these inoculations, however, seem to indicate almost conclusively that the transmission is one not of a parasite, but of the cellular growth itself.

Thus, in the last instance, the problem resolves itself into one of cellular biology, and it is apparently upon this standpoint that it must be attacked.

What are the factors which dissolve the laws of cellular interdependence within the organism, and endow a certain group of these elements with a faculty of vicious and unlimited proliferation, making of them, as it were, another unit within the greater unit? Two histological features of neoplastic growths have been pointed out, as affording a possible explanation of this metamorphosis in the character of the cells. First, there is the conjugation of nuclei which has been observed between cells of these growths; second,

there are the phenomena of so-called "gametoid" karyokinesis, in other words, a type of cellular mitosis which imitates that characteristic of the germinal cells (spermatic and ovarian) and differs markedly from that of the somatic cells. Conjugation, it is suggested, may act as a stimulus to cellular growth and proliferation, as in the protozoa. Reversal of the type of cellular division may be the cause of a reproductive capacity similar to that of the germ cells themselves.

These suggestions are very plausible, very interesting, and, indeed, quite attractive. It is wise, however, to temper one's acceptance, even if only provisional, with something of critical coolness. Granted that the phenomena are correctly interpreted as observed, it is somewhat rash to attribute to them an etiological significance. The processes of cellular division in new growths are notoriously so irregular and so heterogeneous, so rich in novel and abnormal conditions, that it appears unjustifiable arbitration to select one type as the *causa morbi*. It is certainly as logical to regard these particular variations as a phenomenon, a symptom, of the altered cellular activity, rather than as a cause. But even if they be so considered, it still remains to be shown that conjugation or reversion to the gametoid type are efficient causes in the metazoa of malignant proliferation. Certainly, there is as yet not a scintilla of evidence to prove this.

The difficulty of the problem is apparently commensurate with its importance. The Cancer Research Fund has not solved it, although its efforts appear to be directed along the most promising path. It is to be hoped that every advantage and opportunity will be offered for the prosecution of the investigation. Meanwhile, patience, reserve and serious criticism are the part and the privilege of those who eagerly look for some light in the darkness that envelops us.

ECHOES AND NEWS.

NEW YORK.

Appointment of Dr. Opitz.—Dr. Burton-Opitz has been promoted to the Adjunct Professorship in Physiology at Columbia University (P. & S.), with a seat in the faculty of pure science.

Resignation of Dr. Lefferts.—At a meeting of the Faculty of Medicine of Columbia University, held May 23, 1904, it was voted that the following minute be entered on the records of the meeting and that a copy thereof be sent to Dr. Lefferts: "Upon the acceptance of the resignation of George Morewood Lefferts, M.D., M.Sc., Clinical Professor of Laryngology and Rhinology at the College of Physicians and Surgeons, the Medical Department of Columbia University in the City of New York, the Faculty of the College desires to express its high appreciation of the distinguished services which through three decades he has rendered to the institution. The organization and maintenance of an important practical clinical department in the College, eagerly sought by the students of successive generations, and a model of efficient administration, we recognize as a large achievement in the career of a busy practitioner. This long and faithful service and the generous gift to the College of a valuable collection of illustrative specimens and charts are held in high appreciation by his colleagues. A wise and successful teacher, an eminent practitioner, and a genial associate, the Faculty acquiesces in Dr. Lefferts' retirement with reluctance and regret."

Another Sneak Thief.—Several physicians in Harlem are anxious to get their hands on a gentlemanly sneak thief who has been helping himself to the contents of their households. The latest to suffer is Dr. A. J. Bilhoefer of 79 East 116th street, who was robbed of $3,000 a few days ago. The thief called at the doctor's residence in his absence and said he wanted to see Dr. Bilhoefer on very important business. He said he would wait until the doctor came in. Mrs. Bilhoefer was in the basement and the servant went about her duties, leaving the man in the parlor. He then went through the upper floors and took all the jewelry he could find. The same thief is supposed to have paid a visit to the residence of Dr. I. L. Feinberg at 1716 Madison avenue and worked the same game. He did not make out quite so well, as valuables easily carried off were locked up. A number of physicians on the west side of Harlem have been caught by the same thief.

A Mosquito Year.—"Evidence is accumulating," says the *Times*, "that this is going to be a great mosquito year. It is reported that fishermen and surveyors have been obliged to abandon the oyster reefs of Louisiana because of the unprecedented numbers of these fever-infected insects. From New Jersey and other regions come complaints indicating that the mosquitoes are going to break the record. But while in some places concerted efforts are being made to exterminate, or at least mitigate, this plague, Manhattan is given over as a prey to the deadliest of all animals without a struggle. Central Park presents conditions which the most ingenious planning could hardly make more favorable for the breeding of mosquitoes. The ponds are in a deplorably neglected and shamefully filthy condition. A foul-smelling green scum covers the shallow, stagnant water; yesterday old newspapers and tin cans were floating on one of them. The benches placed near these ponds are occupied every afternoon mostly by nurse maids in charge of infants. Mosquitoes abound, and the doctors are tracing cases of malaria to their bites. On windless nights the mosquitoes rise and molest families living in the highest stories of the buildings along Central Park West. It is getting to be risky even to walk through the park. And all this simply because the authorities in charge have not seen fit to resort to the well-known, inexpensive means of combating this evil. The simplest way to abate it would be to keep the water in the ponds clean enough for fish to live in them; they eat the larvæ of the insects. It is only since the fish found life impossible in the polluted water that mosquitoes have become abundant up town."

Pneumonia and Tuberculosis in Chicago and New York.—The term of pneumonia is nearly over for the present season. Since Nov. 1, 1903, there have been 3,703 deaths in Chicago from this cause out of a total of 16,780 deaths from all causes—a proportion of more than one-fifth (22.06 per cent.) of the total mortality. From consumption during the same period there have

been 1,806 deaths, or less than one-half those from pneumonia. Tabulated the deaths from these two causes of death for Chicago and New York between Nov. 1, 1903, and May 28, 1904:

	New York.	Chicago.
Total deaths, all causes	46,999	16,780
Deaths from consumption	5,228	1,806
Deaths from pneumonia	9,865	3,703
Proportion per cent. of all deaths—		
From consumption	11.12	10.76
From pneumonia	20.98	22.06

PHILADELPHIA.

Medico-Chirurgical Commencement.—At the annual commencement of the Medico-Chirurgical College held on May 28, diplomas were awarded to 127 graduates. Of these, 70 were in medicine, 36 in pharmacy and 21 in dentistry. The address to the graduates was delivered by President Swain of Swarthmore College.

Medical Class Organizes.—The class of 1894 of Jefferson Medical College held its first reunion in this city May 27, and effected a permanent organization. The following officers were chosen: President, Dr. W. H. King; Vice-President, Dr. R. C. Rosenberger; Secretary-Treasurer, Dr. W. A. Brinton. A reunion will be held every five years.

Blood Poisoning an Accident.—Judge Buffington, in the United States Circuit Court, has refused a new trial in the case of Katherine Nax against the Travelers Insurance Company, in which she recovered judgment on a $5,000 accident insurance policy held by her husband. In 1902 Mr. Nax died from blood poisoning that resulted from paring a corn too deeply. The company refused to pay the policy on the ground that death was not due to an accident. A jury decided in favor of the widow and Judge Buffington, in refusing a new trial, said that death under such circumstances is as much an accident as if the victim had died as the result of any other unforeseen catastrophe.

Chemical Disinfection of Water.—In reply to the suggestion of the Trades League that electrozone be used for purifying the water supply of the city, Director Martin has virtually stated that chemical disinfection of water is, at present at least, impracticable. A report by Dr. Abbott shows that the electrozone plant at full capacity could furnish only one-twentieth the amount required for the smallest reservoir. In addition, it leaves a slight taste of chlorine as do any of the chloride compounds. Another method under trial will be reported upon later.

Meeting of Associated Health Authorities.—The eleventh annual meeting of the Associated Health Authorities and Sanitarians of Pennsylvania was held at Gettysburg, May 27 and 28. Two important topics considered were the registration of vital statistics and the securing of improved sanitary measures for the State. Dr. Cressy L. Wilbur, of the United States Census Bureau, delivered the annual address on the former topic. A committee was appointed to draft a bill providing for the appointment by the State Board of Officers and Deputy Officers of Health in each county; these are to be under the supervision of the State Board. This would carry with it the repeal of the act of 1889 which provided that school boards may organize as health boards. The working of this law has never been satisfactory. The following officers were unanimously elected: First Vice-President, Dr. S. P. Heilman, of Heilmandale; Second Vice-President, Dr. T. N. McKee, of Kittanning; Third Vice-President, Dr. R. S. Maison, of Chester; Treasurer, Dr. Jesse C. Green, of West Chester; Secretary, Dr. Wilbur R. Batt, of Philadelphia. The Governor of the State is *ex-officio* president.

CHICAGO.

Chicago Policlinic.—Plans have been decided on for the erection of a $150,000 building for the Chicago Policlinic and Hospital at Oak Street and La Salle Avenue. The hospital will be equipped for one hundred patients. At present it is situated at Chicago Avenue, where it has been for eighteen years. The new hospital will be the only institution of its kind owned by physicians and not conducted for profit. Bonds for $150,000 will be issued and work will be begun as soon as possible. Dr. Fernand Henrotin is President; Dr. R. D. MacArthur, Vice-President; Dr. John H. Chew, Treasurer, and Dr. M. L. Harris, Secretary.

University of Illinois Commencement Exercises.—A class of 219 was graduated from the College of Physicians and Surgeons, the Medical Department of the University of Illinois, May 24. Prof. Thomas J. Burrill, Vice-President of the University, conferred the degrees, and Rev. A. R. Lambert delivered the doctorate address.

Illness of Dr. Newman.—Dr. Henry P. Newman, Treasurer of the American Medical Association, was operated on for appendicitis May 21, and the appendix removed. It is said that he bore the operation well, and is progressing favorably toward recovery.

Reciprocity Convention.—The third annual convention of the American Confederation of Reciprocating, Examining and Licensing Medical Boards was held in Chicago, May 24. The Examining or Licensing Boards of the States of Illinois, Indiana, Wisconsin, Michigan, Iowa, Nebraska, Kentucky and Maryland were represented. The address of the President, Dr. W. A. Spurgeon, Muncie, Ind., dwelt on the insufficiency of the courses in the colleges and the lack of proper relation between the various branches. He advocated regulation of the medical college curricula, and of State Board questions as a basis for reciprocity and uniformity.

A Chief Predisposing Cause of Appendicitis; Preliminary Note, with a Few Laboratory Experiments.—Dr. George Rubin, after reporting a case of this disease, detailed some experimental work. The technic was as follows: Portions of bowel, about 50 cm. long, including cecum and appendix, were resected from subjects dead of other diseases than what would affect that part of the intestinal tract. Specimens from very recent post mortems were more desirable, but were not always obtainable. After cleansing the piece of bowel, the colon end was ligated; shot, peas and beans were introduced through the ileum end and the bowel manipulated so as to indicate more or less peristalsis. The rolling of those bodies was often done with more vigor than normal peristalsis would do. It was observed that none of the contents entered the cavity, although the appendix was held at the most dependent point. Then the bowel was inflated, still containing those substances, the same process of rolling again gone through, with the result that in all the experiments, with one exception, where only one small shot entered, owing to a highly hypertrophied appendix wall and constricted lumen, the appendiceal cavity was filled with shot and in two cases peas of medium size gained entrance there. Ten such experiments were carried out. The appendix was readily ballooned during the process of inflation. It is reasonable to suppose, said the author, that similar phenomena might occur in the living. Fitz recorded 19 out of 267 cases of appendicitis which were supposed to be due to indirect violence. Such cases can only be explained in the following manner, that by forcing a larger mass of fecal matter through the ceco-appendicular orifice than the appendix is able to expel, following that trauma to the mucosa with subsequent infection taking

place. It is not improbable that heavy labor, such as heavy lifting, may operate in a similar manner, *i.e.*, owing to the increased intra-abdominal pressure produced by tension of the abdominal wall. These considerations help to explain the marked disproportion in the sexes. Regarding the size of the obstructing mass, no definite statement can be made. The calibers of appendices vary very much. What would be an insignificant particle for one may completely obstruct another. As to the rôle the valve of Gerlach plays in preventing matter from entering the appendix, little can be said, as in all the specimens of bowel the author has examined, in only one was there a lengthening of the mucosa that might have been called a valve. Under ordinary circumstances, the mucous lining itself is sufficient to act as such.

CANADA.

Personals.—Dr. C. R. Elliott, formerly resident physician at St. Michael's and the General Hospitals, Toronto, has been appointed by the United States Government surgeon at the marine hospital, Seattle.

Dr. J. W. Harris, resident physician at the Toronto General Hospital, has been appointed to the position of relieving physician to the Insane Asylums of Ontario.

Dr. C. E. Dougherty, the assistant medical superintendent of the hospital for the insane at New Westminster, B. C., has resigned and will become superintendent of the hospital at the mining camp of Ymir.

News from Queen's, Kingston, Ont.—At a meeting of the medical faculty of Queen's held on the 25th of May, it was decided that the matriculation standard of the Ontario Medical Council was high enough at present. A leading lawyer of Kingston will be appointed to give a series of lectures next session in connection with the subject of medical jurisprudence.

Dr. J. C. Connell, Dean of the Medical Faculty of Queen's University, has received word that Cambridge University would grant recognition to Queen's medical course. This means that Queen's medical students, after spending a session or two or three at Kingston, will have the privilege if they desire of going to Cambridge and completing their course there, full allowance being given for their attendance at Queen's.

New Appointments in the Faculty of Medicine at McGill.—At the last meeting of the Board of Governors of McGill University the following appointments were made in the Medical Faculty: Dr. R. Tait McKenzie to be lecturer in anatomy; Dr. A. A. Robertson to be lecturer in physiology; Dr. W. G. M. Rogers to be lecturer in ophthalmology; Dr. J. W. Scane to be lecturer in pharmacology and therapeutics; Dr. W. S. Morrow to be associate professor of physiology; Dr. A. G. Nichols to be associate professor of pathology and bacteriology.

Consumption Sanitaria in Canada.—At a meeting of the executive council of the Canadian Association for the Prevention of Tuberculosis, a committee consisting of Dr. P. H. Bryce, convener; Dr. J. D. Lafferty, Calgary, N. W. T.; Dr. C. J. Fagan, Victoria, B. C.; Dr. Gordon Bell, Winnipeg, and several laymen was appointed to take steps to secure the cooperation of municipalities and of the governments of the several provinces and of the Government of the Dominion of Canada for the establishment of one large sanitarium in each province for the treatment of consumption. The secretary of the Association was instructed to visit Prince Edward Island, Nova Scotia and New Brunswick in August and September with a view to lecture upon the cause and prevention of consumption and to lecture in Ontario during June and July; and in addition a special committee was appointed of all members of the Association resident in Ottawa with Dr. H. B. Small as convener to take steps to organize for the work in that city.

Nova Scotia's Consumption Sanitarium Opened.—The Province of Nova Scotia, by an Act passed March 30, 1900, appropriated a sum of money for the erection of a consumption sanitarium for tuberculous disease of the lungs. The institution has been declared formally opened, but will not receive patients until the first of July. This government sanitarium is situated about three-quarters of a mile from the town of Kentville, about seventy miles from Halifax. The building cost without furnishings $20,000, and has accommodations for 20 patients. The Act provides that there shall be appointed two examining physicians and that both shall be residents of Halifax, but these have not as yet been selected. There will be no resident physician, but arrangements will be made whereby one of the physicians of Kentville will make frequent visits to the institution. In the meantime the institution will be under the charge of the lady superintendent who is a graduate of one of the Boston hospitals, and who has had special training in the Massachusetts State Sanitarium and in the Sharon Institution.

GENERAL.

Medical Interne.—Government Hospital for the Insane. The United States Civil Service Commission announces an examination on June 29-30, 1904, to secure eligibles from which to make certification to fill at least two vacancies in the position of medical interne in the Government Hospital for the Insane, Washington, D. C., at $600 per annum each, and other similar vacancies as they may occur in that hospital. The examination will consist of the subjects mentioned below, valued as indicated:

Subjects.	*Weights.*
1. Letter-writing (the subject-matter on a topic relative to the practice of medicine)	5
2. Anatomy and physiology (general questions on anatomy and physiology, and histologic or minute anatomy)	15
3. Chemistry, materia medica, and therapeutics (elementary questions in inorganic and organic chemistry; the physiological action and therapeutic uses and doses of drugs)	10
4. Surgery and surgical pathology (general surgery, surgical diagnosis; the pathology of surgical diseases)	20
5. General pathology and practice (the symptomatology, etiology, diagnosis, pathology, and treatment of disease)	25
6. Bacteriology and hygiene (bacteriologic methods, especially those relating to diagnosis; the application of hygienic methods in prophylaxis and treatment)	10
7. Obstetrics and gynecology (the general practice of obstetrics; diseases of women, their pathology, diagnosis, symptoms, and treatment, medical and surgical)	15
Total	100

Age limit, twenty years or over. This examination is open to all citizens of the United States who comply with the requirements. Applicants must be graduates of reputable medical colleges. Applicants should at once apply either to the United States Civil Service Commission, Washington, D. C., or to the secretary of the local board of examiners at the places mentioned in application Form 1312. No application will be accepted unless properly executed and filed with the Commission at Washington prior to the hour of closing business on June 22, 1904. In

applying for this examination the exact title as given at the head of this announcement should be used in the application.

Rush Monument Dedication.—The Rush Monument Committee of the American Medical Association will unveil and dedicate the monument to Benjamin Rush, on Saturday, June 11, 1904, at 5 o'clock P.M., on the grounds of the Naval Museum of Hygiene and Medical School, Twenty-third and E streets, N. W., Washington, D. C. An introductory address by the president of the American Medical Association will be made and a eulogy of Rush by Dr. J. C. Wilson, of Philadelphia, delivered. An acceptance of the monument as a gift to the nation will be made by the President of the United States.

International Tuberculosis Congress.—The International Tuberculosis Congress was formally opened in Parliament House, Copenhagen, last Friday, under the presidency of Professor Brouardel, of Paris. Crown Prince Frederik, the Ministers and members of the Diplomatic Corps, including the United States Minister, Mr. Swenson, were among those in attendance. Delegates from twenty countries, among them Dr. Pottenger, of Los Angeles, Cal., and E. L. Trudeau, of New York, were present. The Premier, M. Deuntzer, welcomed the delegates.

The American Gynecological Society will meet next year at Niagara Falls. The officers elected for the ensuing year are: President, E. C. Dudley, Chicago; vice-presidents, H. D. Fry, Washington, and H. C. Coe, New York; treasurer, J. M. Baldy, Philadelphia; secretary, J. Riddle Goffe, New York. The society amended its constitution to read as follows: "The object of this Society shall be the promotion of knowledge in all that relates to diseases of women, to obstetrics and *to abdominal surgery.*"

Walter Reed Memorial Association.—The Walter Reed Memorial Association has been incorporated under the General Laws of the District of Columbia, to give unity to the various proposals which have been made for the securing of a Memorial Fund. This Association is now organized for the collection and care of such sums as may be entrusted to it. Printed papers explanatory of the services of Major Reed, U.S.A., and respecting this Association are ready for distribution and will be sent to those who apply for them. Contributions from individuals, medical societies, boards of trade and other business organizations are now solicited. They may be sent to the treasurer, Charles J. Bell, American Security and Trust Company, Washington, D. C., by whom they will be acknowledged.

Kalamazoo Hospital.—On May 24 the corner-stone of the new Kalamazoo Hospital at Kalamazoo, Mich., was laid with appropriate ceremonies that were participated in by many of the prominent citizens of the town. Addresses were made by the Mayor, James W. Osborn, Rev. E. J. Blekkink, Dr. H. B. Osborne, Rev. W. M. Puffer, D.D., and Rev. H. W. Gelston, D.D. Music was rendered by a quartet, and at the close of the exercises the entire audience united in singing "America." The Kalamazoo Hospital is the result of four years hard work, and the laying of the corner-stone marks the reality of this much-needed addition to the beneficent institutions of the town. The money for the building has been raised by unceasing efforts of the women of the city, who united in one grand endeavor to secure this city hospital. Hundreds of contributions have been made, bazars, trolley-days, what-so-ever circles, and entertainments of other kinds have combined with the liberality of a few leading citizens in producing the required sum of money. The building is to cost $28,000, exclusive of the plumbing and heating, and the money has all been raised. The principal gifts were from Dr. Edwin H. Van Deusen, $10,000; the estate of Horace B. Peck, $5,000; the Woman's Auxiliary, $8,025, and the remainder has been contributed by smaller subscriptions. When completed the hospital will have 40 beds. It is nonsectarian, open to all the citizens of the town as well as strangers, and with its sister institution, the Borgess Hospital, will furnish room for the care of all the sick and emergency cases of the city for a considerable time to come. The present officers of the association are Dr. W. E. Upjohn, President; Mrs. C. H. Williams, Vice-President; E. J. Phelps, Treasurer; Guy Van de Kreeke, Secretary.

Phi Chi Fraternity.—At the National Convention of the Phi Chi Fraternity (medical), held in Burlington, Vt., May 25, 1904, Dr. F. E. Clarke, Instructor of Histology and Pathology in the Medical Department of the University of Vermont, was elected Grand President. That evening the local, Alpha Chapter, gave a banquet to the visiting delegates and the members of the faculty at the Van Ness House; President Clarke acting as toastmaster. Among those present who responded to toasts were: Dr. A. O. J. Kelley, of Philadelphia, Pa.; Dr. A. R. Shands, of Washington, D. C.; Dr. H. C. Tinckham, Demonstrator of the Faculty of the Medical Department of the University of Vermont, and President Matthew Henry Buckham, of the University. The next national convention will be held in Baltimore, Md., some time in January, 1905.

Consumption from Cattle.—The royal commission, appointed in August, 1901, to investigate the connection between human and animal tuberculosis, has reached certain conclusions embodied in an *ad interim* report, which in effect refutes Prof. Koch's much discussed theory that tuberculosis cannot be communicated by animals to human beings. The commissioners attacked the problem experimentally instead of beginning by collecting opinions, and their main conclusion is thus expressed: "We have most carefully compared the tuberculosis set up in bovine animals by materials of human origin with that set up in bovine animals by material of bovine origin, and so far have found the one, both in its broad general features and in its finer histological details, identical with the other. Our records contain accounts of post-mortem examinations of bovine animals infected with the tuberculosis material of human beings which might be used as typical descriptions of ordinary bovine tuberculosis." This, in the judgment of the commissioners, "seems to show quite clearly that it would be very unwise to frame or modify legislative measures in accordance with the view that human and bovine tubercle bacilli are specifically different and that the disease caused by one is wholly different from the disease caused by the other." The commissioners experimented with more than two hundred bovine animals. Their present conclusions, which will be followed by a further report, strikingly support the view of a majority of English medical men and are likely to lead to a strengthening of the regulations regarding the sale of meat and milk.

OBITUARY.

Dr. Ralph N. Isham, for nearly half a century one of the leading physicians of Chicago, died last week at the home of his daughter, at Lake Forest, Ill.

Dr. Thomas Murray Drysdale, the well-known gynecologist, is dead at the age of seventy-three years. He was born and educated in Philadelphia and practised there except during the time he was in the Civil War.

Dr. Drysdale held various teaching and honorary positions and was prominent in his specialty.

Dr. F. SAVARY PEARCE, Professor of Neurology at the Medico-Chirurgical College, Philadelphia, died at the home of his father in Steubenville, Ohio, May 27, at the age of thirty-seven years. Excessive application to work, especially in the preparation of text-books, led to a breakdown that ultimately resulted in death. Dr. Pearce graduated from the University of Pennsylvania in 1891 and had been connected with the Medico-Chirurgical College for four years.

SPECIAL ARTICLE.

BYWAYS OF MEDICAL LITERATURE.—XXI.

PROTOZOA AND DISEASE.

IN the April number of the *Century Magazine*, Dr. Gary Calkins, Adjunct Professor of Zoology at Columbia University, has an excellent article on the etiological connection between certain forms of protozoa and infectious diseases in human beings, that while popularly interesting is thoroughly scientific. At the present time it must be recalled that some of the most important diseases that afflict mankind, among them some whose cause has longest remained a mystery, are either known to be due to protozoa, or, at least, the causes of these diseases are suspected to be of protozoan character. Malaria is surely due to a protozoon, or perhaps to several forms of protozoa, whose life history has now been worked out. Discoveries made last winter by Dr. F. B. Mallory, of Boston, seem to point surely to the fact that scarlet fever is also due to a protozoon. It is more than suspected now that yellow fever is due to the same form of parasite, and the analogy with malaria, because of the mosquito distribution, confirms this very strongly. It is easily seen then how important these microorganisms are. Two paragraphs from the beginning of Prof. Calkins' article give a very good idea of the place in nature of the protozoa:

"Since Pasteur demonstrated the fact that many human diseases are due to minute living things which grow and multiply in our bodies, there has been a tendency to call all microscopic organisms, whether harmful or not, 'germs' or 'microbes' or 'bacteria' indiscriminately. This confusion may be cleared by the statement that protozoa are the lowest known forms of animals and that bacteria are the lowest known forms of plants, while 'germs' and 'microbes' may apply to the disease-causing forms in either group.

"Protozoa are higher in the scale of living things than bacteria, their structures are far more complicated and their methods of living more complex, while most of them far surpass the bacteria in size, some, indeed, being visible to the naked eye. Like most bacteria, the majority of protozoa are absolutely harmless; but, unlike others (those that aid us in the digesting of our food, for example), no protozoa do us good except in the very general way of helping to maintain what is known as the 'balance of nature.'"

With regard to the etiological connection between protozoa and human diseases the first step was, of course, Laveran's discovery of the malarial organism. The connection of protozoa with smallpox has been suspected for at least as long a period as that, but the first step of demonstration was made in Italy. To quote Prof. Gary once more:

"As early as 1892 an Italian, Guarnieri, discovered a protozoon in vaccinated skin and the same protozoon in skin from smallpox patients. Guarnieri named the organism *Cytoryctes variolæ* and described it as the cause of smallpox. Neither he nor subsequent observers went further than this, and, until Dr. Councilman discovered them last spring, the most important stages in the life of the germ were overlooked. The stages of reproduction to which the virulence of smallpox must be attributed were made known by this discovery, and Councilman was able to give the very important generalization that vaccinia, or the mild disorder caused by vaccination, is due to the presence of the organism in the cell bodies of the human skin, while the more virulent disease, smallpox, is due to the presence of the same organism in the nuclei of these cells as well as in the cell-bodies."

While Prof. Calkins' illustrations give an excellent idea of certain stages of the protozoa which resemble the smallpox germ very closely he confesses that:

"It is not possible to describe the smallpox germ so as to convey an intelligible idea of its appearance. It has no definite form, but, like the free-living organism *Amœba proteus*, it constantly changes in shape. The reproductive bodies in the non-sexual phase are minute solid spheres, hardly visible when not in groups. The spores, which probably convey the disease from person to person, are equally minute, but differ from the former bodies by the presence of vesicles which occupy the greater part of the spores. This vesicle is characteristic of the entire group of *Microsporidia* in which *Cytoryctes* belongs, and it is probably an important element of the spore, for it reduces weight and renders it light enough to be wafted about by the lightest breath.

"Our knowledge of the smallpox organism is as yet very incomplete, and further experiments and study must be undertaken before it will be as clearly understood as are the organisms of malaria. The method of transmitting the disease from man to man, and the location of the parasite when outside of man, are quite unknown, but we are fortunate in the knowledge that the disease can be prevented by vaccination, the organism being injected into the skin-cells, where it undergoes a limited development and never grows into the destructive phase whereby the cells and nuclei of the skin are wrecked. The secret of this limitation is unknown, and it, together with the general problem of the immunity conferred by vaccination, remains for the future to solve.

"The discoveries of the protozoan parasites of malaria, smallpox, scarlet fever, and yellow fever should stimulate pathologists and biologists to a renewed study of other diseases in which the specific causes are unknown. Such study must lead to the further relief of human suffering, for as vaccination produces some slight change which makes the system unsuitable for growth of the smallpox organism, or as warfare on the mosquito limits the spread of yellow fever and malaria, so preventive or remedial measures will follow future observations and discoveries, and it is not too Utopian to believe that, before long, some comparatively simple means may be found to prevent or to cure diseases like scarlet fever or even cancer."

THE ATOMIC THEORY OF MATTER AGAIN.

Physicians generally are sufficiently interested in chemistry and chemical theory to have kept themselves to a considerable extent, at least, familiar with recent progress, real or supposed, as to the chemical and physical explanations of the constitution of matter. So much of the ordinary scientific journal has in very recent years been taken up with discussion of the ionic theory of the constitution of matter, that is, the theory which postulates ions (atoms) charged with certain dynamic principles, probably electrical in character, as the basis of matter, that the impression is apt to have

been produced that the old atomic theory of the constitution of matter had gone out entirely. This, however, is far from being true, and some recent publications, especially from the pen of Mendelejev, show that the atomic theory may still prove quite as vital as the newer ionic theory.

Mendelejev will be remembered as the distinguished Russian chemist who first showed the law of periodicity in atomic weight. About a quarter of a century ago or more this law proved very illuminating for chemistry and even pointed out the probable existence of certain elements as yet undiscovered which later were actually discovered. Mendelejev's law, as the application of his principle of periodicity came to be called, also proved very valuable as regards the relationship between the various elements and their action and reaction upon one another. It was even thought at one time that this law might be of use in the explanation of the physiological action of elementary substances, at least upon the body, and that its application might prove the basis for a system of rational therapeutics, as opposed to our present system of empiric therapeutics. Unfortunately this hope was never realized. Drug action upon the human or animal body is entirely too complex a matter to be explained by any mere chemical principle.

In a recent issue of *Prometheus*, a well-known continental journal of chemical science, Mendelejev has given a chemical explanation of the ether, and in doing so has also attempted to explain the radio-activity. As it is principally the phenomena of radio-activity which have proved most difficult of explanation on the old atomic theory, his words are of great interest. Besides, the ether itself as a substance which, according to the theory of the wave transmission of light, must be more elastic than steel, and yet is so tenuous as to penetrate all other substances, has had for many minds a mysterious aspect that made them think of it as something rather demanded as a part of a working hypothesis than as an actually existent material. It is not as such that Mendelejev treats it. We quote his expressions as they are given in *Science*, Vol. 19, No. 479, 1904:

"It cannot consist of matter known, disseminated in an exceedingly attenuated condition, because it penetrates all matter, nor can it be the 'Urstoff' (primal matter, original material) since this would involve the possibility of the annihilation and evolution of atoms. It must rather be considered as a definite chemical substance so light that its molecular velocity is great enough to overcome gravitation; it is without chemical affinity; its power of diffusion is so great that it can penetrate all bodies, and hence cannot be weighed, although it actually possesses an extremely small weight. Mendelejev would thus consider the ether to be the first member of the argon group in the periodic system, or what he calls the zero group, and places immediately before the alkali group. By extrapolation he posits an element in this group immediately before hydrogen, with an atomic weight of about 0.4. This he considers possibly identical with coronium. The ether must have a still smaller atomic weight, whose value, owing to this double extrapolation, is extremely doubtful, but certainly cannot be over 0.17. For this ether as an element he proposes the name of *Newtonium*. That the ether molecule can escape the attraction of the larger bodies of the universe its velocity must be, according to the kinetic theory of gases, at least 2,240 kilometers per second, and from this its atomic weight would be about one millionth that of hydrogen.

"By means of this conception it becomes possible to account for radio-activity without having recourse to what Mendelejev denominates the metachemical and vague theory of electrons. The radio-active atoms, with their high atomic weights, possess, as large centers of mass, the power of holding a relatively large number of ether atoms, although there is no chemical combination. The entrance and exit of these ether molecules from the groups are accompanied by those disturbances of the ethereal medium which cause the rays of light. The phosphorescence of bodies immersed in liquid air is caused by the increased absorption and condensation of ether molecules at low temperatures. The original article contains many other suggestive thoughts, such as the probability of a fifth halogen element, with atomic weight of about three, corresponding to the fifth metal of the alkalies."

This other side of the question of radio-activity and its explanation makes clear how little is really known of these phenomena, which have lately attracted so much attention by both chemists and physicists. It also serves to show the futility of hopes of wonderful curative properties founded upon radio-active materials. As a matter of fact radio-activity is not so uncommon as has been thought, and it is probable that we have been taking into our systems much radio-active material without at all realizing it and without our ordinary metabolism being at all affected by it. Unfortunately, however, whenever there is anything new discovered there will always be those to cry out on the market place that at last the great secret has come and that the mysteries of health and disease are to be obscure no more.

PRACTITIONER.

A very dear old friend of one of the contributors to these Byways asked the other day on what principle was the word practitioner so commonly used as a synonym for physician. The word practitioner has something of a shady meaning among lawyers, implying that its bearer is perhaps not much more than a pettifogger. Is there not at least a shade of this meaning in the word practitioner as applied to a medical man also, and should not the full expression always be used—practitioner of medicine? Long ago, so long that the present generation is not likely to remember much about it, that delightful critic of English, Mr. Richard Grant White, called attention in his "Words and Their Uses," a book which has gone through some seventeen or even more editions, had something to say with regard to this word practitioner.

It is in the chapter on words that are not words in the original edition and runs thus: "Practitioner is an unlovely intruder, which has slipped into the English language through the physician's gate. We have no word practition to be made a noun of agency by the suffix er or ist. But either practitioner or practitionist means only one who practises, a practiser. Physicians speak of their practice, and of the practice of medicine, and in the next breath call a medical man a practitioner. The dictionary-makers give practice as the stem of practitioner—it is difficult to see why. The word is evidently the French practicien, which has been anglified first by distortion, and then by an incongruous addition, in the hope of attaining what was unattainable—a word meaning something bigger and finer than is meant by the simple and correct form practiser."

In one of the subsequent editions of his work Mr. Richard Grant White returns to the word, showing some of the unsavory estimations of it, that it would perhaps be well for medical writers to know who insist on using the term. He says:

"The word practitioner, which has already been remarked upon as abnormal and indefensible, also affords an illustration of the point under discussion. It is not a new word, its use dating back at least three hundred years. Bishop Latimer, according to Richardson, uses

it in his sermon on the Lord's Prayer, applying it to Satan: 'Consider how long he hath bin a practitioner;' and I find it in 'The Gardener's Labyrinth' (Ed. 1586), more than once. For example: 'Sundrie practitioners mixed the bruised leaves of the cypress tree,' etc. (p. 32). We have legitimate words with which the formation of this one seems to be analogous. Wicliffe writes, 'For how manye weren possessioneris of feldis,' etc., and Sidney, 'Having been of old freedmen and possessioners.' I venture to say that Wicliffe and Sidney might much better have written possessors; but still there is a noun possession from which possessioner may be properly formed. So from redemption we have redemptioner, and from probation, probationer. But there is no noun practition, from which to form practitioner, and, therefore, even Latimer cannot make it a normal product of our language. As to my conjecture that it was formed in imitation of the French practicien, I have since found the following interesting and confirmatory passage in Stephen's 'World of Wonders' (A.D. 1616):

"'What reason is it then that Lawyers should make them such good sport for nothing? Or that they should be weary of taking before they be weary of giving? And I am easily induced to thinke, that when they were called Pragmaticiens, that is Pragmatitioners (by the original word), things were not so out of square; but since that a sillable of their name, was clipped away, and they called Practiciens, that is, Practitioners, they knew well how to make themselves amends for this curtailing of their name, as well upon their purses who were not in fault, as upon theirs who were the authors thereof'" (p. 129).

All of which goes to show that the term practitioner, unqualified, has always been in bad odor and that when used seriously as a synonym for physician, which is quite a good enough word for most people, the adjective medical should be added to it so as to avoid any of the innuendos that otherwise might go with its unqualified employment.

RATIONAL AND EMPIRIC USE OF DRUGS.

Some of Sir William Gowers' remarks with regard to the employment of drugs on rational grounds or for empiric reasons only, represents so well the truth in this important matter and at the same time are so full of information of a kind not easily obtained that every physician should have them in his scrap book. They were published in the recent volume of clinical lectures, published in this country by Blakiston, and were reviewed in the MEDICAL NEWS a short time ago:

"The term 'rational therapeutics' is applied to treatment in which a drug is given with success in accordance with preconceived ideas or theory. The theory may turn out quite wrong, although the result is the same. What, then, becomes of the rationality? In empirical therapeutics a drug is given because it is found by experience that in the particular condition it does good. Often we cannot even guess why. But the fact remains, and surely to act upon observed experience is as truly a rational proceeding as is action upon a theory which may be correct or incorrect. After all, the medicinal treatment which can be based upon any definite theory is small. How few are the drugs we can use to advantage which were not discovered by pure experience. In not one drug in twenty of those of most certain service can the use be traced to anything except unguided experiment. Our knowledge of these drugs, derived from the past,—and often from the distant past,—must be assumed to be the result of experiments innumerable, or perhaps continued through the long centuries in which the human race has lived under the need to counteract disease by every available means. The need for food must itself have led to a knowledge of the physiological action of most herbs of the field, and the habits of animals under observation may often have had the force of example. It is probable that since man became able to observe and to reason, every common herb of the field and fruit of the tree has been at some time tested, and thus by slow degrees the knowledge of a physical good and evil has been acquired.

"It is strange, indeed, to note how far back goes the use of the drugs on which we most rely. Most of them can be traced back into the distant past until they are lost in the blue mists which shroud alike the hills of Greece and the deserts of Arabia, or to the time when the world learnt its wisdom from the land where not the symbols of man's thought lie deep beneath the desert sand or stand silent in the cold moonlight of a long dead past. We smile at the popular herbal remedies. But it is to these that we owe the majority of our most useful drugs. I cannot conceive a therapeutist surveying a list of the chief drugs on which we depend in our daily work—and do not depend in vain—without a sense of wonder and perhaps of humiliation. We disinfect out our rooms with burning sulphur; and so men did before the time of Homer. We purge sometimes with rhubarb, especially when some subsequent astringent influence is desirable, and so did the old Arabians for the same special reason. The value of castor oil in its chief use was familiar, probably for ages, to the natives of the East and of the West Indies before it was made known in Europe by a physician from Antigua, one hundred and fifty years ago. Aloes was employed in the same way long before the time of Dioscorides and Pliny. The knowledge of the influence of ergot in parturition we owe to the peasants of Germany, and the use of male-fern for tapeworm goes back to the old Greeks and Romans. The employment of mercury in syphilis by inunction and fumigation, which our nineteenth-century therapeutists regard with such satisfaction, seems to go back to the time of the Crusades, and it is said that its use can be traced in Malabar as far back as the ninth century. Podophyllum as a purgative we owe to the North American Indians. If we go through all the drugs on which we most rely we find the same story. Even in the case of those which are the latest additions to our resources, we find that, with very few exceptions, their use arose from what we must regard as pure empiricism. It was by accident that the local anesthetic influence of cocaine was discovered. The unexpected results of a simple experiment afforded us the chief use of antipyrin; and that which is perhaps the greatest practical discovery of modern times in the influence of drugs on disease—the use of bromides in epilepsy—was the result of a chance observation of its use on an allied state—also empirical. Precisely the same treatment is true regarding the employment of iodide in syphilis. It arose from almost random trial of the influence of burnt sponge on goiter. To this day we are without any rational perception of their mode of action. I yield to no one in my sense of the importance of the rational in therapeutics; but we need to be careful lest, in contrasting the rational and the empirical, we allow our esteem for the one to induce a depreciation of the other. We can afford to despise no source or kind of help, nor to permit our estimate to be prejudiced by the many warping influences to which our thought is liable.

"Any attempt to frame a definition of rational therapeutics will, I think, have one effect. It can hardly fail to raise a doubt as to the propriety of considering that a theory to explain an empirical discovery makes the

therapeutics rational. It is very easy to frame a theory of the action of a drug, and it is easy to extend this theory to the nature of the disease in which the drug does good, and at the same time to ignore the many other possible ways in which the effect may be produced, and so to build from an uncertain foundation an edifice altogether unstable. When I recommend a drug I am often asked 'How does it act?' Occasionally I can give some adequate reason, but I am generally compelled to answer, 'I do not know; it is often useful in this condition.' Sometimes I can add, 'There are several ways in which it may act.' Sometimes I am obliged to say, 'I have no idea how it does good.' It has not been my privilege to add much to our therapeutical resources, but the few agents I have recommended have been based on pure empiricism. Many observers have confirmed the statement which I made more than twenty years ago regarding the occasional service of borax in epilepsy. In inveterate cases, which do not yield to bromide, borax sometimes does good that is definite and distinctly greater than that which bromide produced in those patients. But I cannot say why. It was one of the many things I tried, simply as a peasant might try in succession a number of herbs. Further, the diminution in the tendency to the distressing pains in locomotor ataxia, which is caused by the regular administration of chloride of aluminum, is so distinct that I have little doubt that the time will come when this drug will find a place in the Pharmacopœia. But I had no other reason for trying it than the fact that some analogue suggested it. Of the rational we have here no trace, although I should take exception to the difference involved in the application of the epithet 'irrational.'"

A DECALOGUE OF HEALTH.

There are many expresions of older physicians that deserve a permanent place in the scrapbooks of modern general practitioners of medicine, where they would often be seen in order to recall some of the important principles that clinical experience has shown to be of special value. Among these one of the most deserving of a prominent place are the ten good rules of health which were formulated by Dr. Frank H. Hamilton, the distinguished New York surgeon, who was in no sense a narrow specialist, and whose large-minded view of things medical makes his opinion of special importance. He called these rules a decalogue of health, and now that interest very generally is being awakened and the important problem of maintaining health by physical culture and habits that aid nature in her effort to preserve health, the reprinting of them will show that the modern fad, in as far as it does not go into exaggeration, is not something new, but agrees with commonsense opinions of physicians in every generation.

Here then is Dr. Hamilton's Decalogue of Health:

1. The best thing for the inside of a man is the outside of a horse.

2. Blessed is he who invented sleep—but thrice blessed the man who will invent a cure for thinking.

3. Light gives a bronzed or tan color to the skin; but where it uproots the lily it plants the rose.

4. The lives of most men are in their own hands, and, as a rule, the just verdict after death would be—felo de se,—took his own life.

5. Health must be earned—it can seldom be bought.

6. A change of air is less valuable than a change of scene. The air is changed every time the wind is changed.

7. Mold and decaying vegetables in a cellar weave shrouds for the upper chambers.

8. Dirt, debauchery, disease and death are successive links in the same chain.

9. Calisthenics may be very genteel, and romping very ungenteel, but one is the shadow, the other the substance, of healthful exercise.

10. Girls need health as much—nay, more than boys. They can only obtain it as boys do by running, tumbling—by all sorts of innocent vagrancy. At least once a day girls should have their halters taken off, the bars let down, and be turned loose like young colts.

IBSEN AND PSYCHOPATHOLOGY.

Those who are interested in theatrical psychics had another opportunity in the presentation of Ibsen's drama of Rosmersholm by the Century players to see how well the Norwegian dramatist is able to put psychopathological conditions into dramatic form. The story is a comparatively simple one, the climax of dramatic action being brought about by a dominant idea, an obsession that finally works itself in the lives of those who live in the constant presence of the overmastering thought of the suicide of the wife from a bridge that can be seen from the window of the house. Beata, the wife, evidently of not very strong mind, in fact, generally believed to be of less than normal mental powers, in a mingled fit of jealousy and supposed good-will toward her husband, so as to enable him to marry the woman whom she considers he loves, commits suicide. The idea of this death falls like a pall over the old gloomy house, whose possessors have always been of rather melancholy disposition, and it is not lifted by the determined efforts of the nurse whose presence has been the cause of the wife's suicide.

On the contrary, it brings out very clearly what so frequently happens—the influence of a psychic contagion, which finally influences the mind of the nurse and leads her to agree to commit suicide at the suggestion of the husband, who accompanies her to her death. From the very beginning one feels how well Ibsen has realized the power of such a dominant idea, especially with the scene of the death always in view from the drawing room window, and the constant reminder of the awful cloud that hangs over the house. Specialists in mental diseases know how much of influence for evil such an obsession may have and how it may pervert the best intentions and keep people from getting interested in their lifework rather than in this dominant melancholic idea that is so insistently in their lives.

It is a study in pathological psychology that Ibsen has put upon the stage in Rosmersholm. It bears a curious resemblance, which Mr. Huneker pointed out in a recent number of the *Sun*, to the old tragedies of the Greeks, with stern fate and inevitable necessity always in the background of the picture. Mr. Huneker says:

"The protagonist of Rosmersholm, is Beata. She is seldom long absent from each of the four acts. She peers over the edges of the dialogue, and in every pause one feels her unseen presence. An appalling figure this drowned wife, with her staring, fish-like eyes! She revenges herself on the living in the haunted brain of her wretched husband, and she exasperates Rebecca, slowly wearing away her opposition until the doleful catastrophe. There is something both Greek and Gothic in this spectral fury, this disquieting Ligeia of the milldam.

"We find the old hero and heroine obsessed by fate, replaced by this neurasthenic pair. The antique convention is altered, ancient values depreciated. A hero is no longer interesting or heroic; the heroine, a criminal, is no longer sympathetic. Yet we are enthralled by this sinister spectacle, for if cultivated man disdains the crude dramatic pictures of lust and cruelty admired of his ancestors, he, nevertheless, hankers after tragedy. And it is for the modern that Ibsen has devised a tragic, ironic drama of the soul. In doing this the

dramatist is the slave of his own epoch, for to quote Goethe again, a genius is in touch with his century only by virtue of his defects; he, too, must be an accomplice of his times."

Ibsen is perhaps not to be blamed for presenting with such wonderful dramatic force studies of real life. We would not for an instant consider that he is in any way to be identified with his creations. There is real genius in them. It seems very doubtful, however, whether any good can ever be accomplished by such work, and whether, on the contrary, it may not even be a source of harm to the neurotically inclined, who are most apt to be interested in Ibsen. The very feeling of the all-powerful influence of an imperative idea, as brought out in such a play as Rosmersholm, is apt to weaken whatever inhibitory control is yet alive in neurotic natures and make them feel their inadequacy to control the course of what must seem to them as inevitable nature.

MEDICAL BOOKS POPULAR 200 YEARS AGO.

Books Printed for and Sold by William Innys, at the Prince's-Arms in St. Paul's Church-Yard. London.

Anthropologia Nova: or a New System of Anatomy, describing the Animal *Economy*, and a short Rationale of many Distempers incident to Human Bodies, illustrated with above 80 Figures drawn after the life; and to every Chapter a *Syllabus* of the Parts, described for the Orstruction of young Anatomists, by *James Drake,* M.D. In 2 Vols. *8vo.*

The Anatomy of Human Bodies; with Figures drawn after the life, by some of the best Masters of *Europe,* and curiously engraved in 114 Copper-Plates. By *William Cowper, Oxford.* Printed at the Theater, on large imperial paper, in *Folio.*

Pharmacopoeia Extemporanea: or a Body of Prescripts, in which Forms of Select Remedies accommodated to most Intentions of Cure, usually occurring in Practice; together with Virtues, Reasons of Operation, Rules, Cautions, Practical Observations, Manner of giving Doses, a Catalogue of Medicines and Copious Index, are proposed for the Assistance of young Physicians. Done into *English* out of *Latin*, by the Author. *Theo. Fuller,* M.D., with large additions. *8vo,* 1710.

An Essay concerning the Knowledge and Cure of most Diseases afflicting Human Bodies. To which is annex'd a short Account of Salivation and the Use of Mercury. By *P. Poxton,* M.D., *8vo,* 1711.

The History of Cold Bathing, both Ancient and Modern, in two Parts, by Sir *John Floyer,* of *Litchfield,* Kt., and *Edward Baynard,* M.D. The Third Edition, with large Additions, *8vo,* 1700.

Praxia Medica: The Practice of Physick; or Dr. *Sydenham's Proceffus Integri,* translated out of *Latin* into *English*, with large Annotations, Etc., and various methods of Curing the Clap, Running of the Reins, *French Pox,* Etc. The Second Edition, enlarged throughout with some thousands of Additions, not in the former Impression. By *William Salmon,* M.D., *8vo.* 1707.

Pharmacopoeia Bateana: Or, *Bate's Dispensatory,* translated from the last Edition of the *Latin* Copy, Containing his choice and select Recipes, The *Arcana Goddardiana*, Etc. The Fourth Edition. By *W. Salmon,* M.D., *8vo.* 1813.

Phthisiologia: or, a Treatise of Consumption, wherein the Difference, Nature, Causes, Signs, and Cure of all sorts of Consumption are explained. By *Richard Morton,* M.D.

The Anatomy of the Brain, containing its *Mechanism* and *Physiology.* By Dr. H. Ridley, in *8vo.*

D. Guil. Cole Nova Hypothesis ad explicanda Febrium intermittentium Symptomata, *8vo.*

Gualt. Harris, M.D. Morbis Acutis Infantum. 2nd Ed. *8vo,* 1705.

Three *Physico-Theological* Discourses, concerning (1) The Primitive Chaos and Creation of the World. (2) The General Deluge, its Causes and Effects. (3) The Dissolution of the World, and General Conflagration. *8vo.*

The Wisdom of God manifested in the works of Creation, in two Parts, *viz.*, The Heavenly Bodies, Elements, Meteors, Fossils, Vegetables, Animals (Beasts, Birds, Fishes and Insects), more particularly in the body of the Earth, its Figure, Motion and Consistency, and in the admirable Structure of the Bodies of Man, and other Animals, as also in their Generation, etc., with Answers to some Objections. 5th Ed. Very much enlarged. *8vo,* 1709.

Medical Experiments: Or a Collection of Choice and Safe Remedies, Very useful for Families, and fitted for the Use of Country People. By the Honourable *Robert Boyle,* Esq. 4th Ed. Enlarged with a Supplement, *12mo.*

Of the Reconcileableness of Specific Medicines to the Corpuscular Philosophy. To which is added a Discourse about the Advantages of the Use of simple Medicines. By *Robert Boyle,* Esq. *8vo.*

Short Memoirs for the Natural, Experimental History of Mineral Waters. By *Robert Boyle,* Esq. *8vo.*

Blancardi Opera Medica, Theoretica, Practica and Chirurgica, 2 vols. *4to.* With Illustrations.

Hippocratis and Galeni Opera Grae. Lat. 13 Vol. Fol. *Paris.*

Plumier Description of Plants of America.

SOCIETY PROCEEDINGS.

AMERICAN GYNECOLOGICAL SOCIETY.

Twenty-Ninth Annual Meeting, held in Boston, Mass., May 24, 25 and 26, 1904.

FIRST DAY—MAY 24TH.

The Society met in the Boston Medical Library under the Presidency of Dr. Edward Reynolds, of Boston.

Address of Welcome.—An address of welcome was delivered by Dr. Charles M. Green, of Boston, which was responded to by Dr. Henry T. Byford, of Chicago.

The Treatment of Gall-stones Found as a Coincidence in Abdominal or Pelvic Operations.—Dr. John G. Clark, of Philadelphia, stated that among the unsettled questions in abdominal surgery, the treatment of gall-stones found as a coincidence in abdominal or pelvic operations might be considered a debatable one. He followed the plan at present of removing gall-stones which were found in the course of another operation, if the patient's condition permitted of this extra operation. Although it was stated that 95 per cent. of gall-stones produced no symptoms, he believed that this statement should not be applied to cases as one met with them at the time of an operation. In his review of recent literature he had been especially impressed with the fact that knowledge of the early stages of cholelithiasis was very indefinite, and that many cases which came to operation for more or less urgent symptoms did not have the clinical symptoms of colic and jaundice, as usually taught in medical schools. In view of this hiatus in the early history of this disease, he believed that many symptoms now attributed to gastralgia, indigestion, functional disturbances of the gastro-intestinal tract, etc., would, as knowledge increased, be ascribed to the presence of gall-stones with associated infection, which was so frequently found in cholelithiasis. In referring to the

etiology of gall-stones, he said that three facts had been prominently established: (1) That the bile was not bactericidal. (2) That the microorganisms in the gall-bladder were predisposing, if not absolute, causative factors in the formation of gall-stones. (3) When gall-stones were present in the gall-bladder, infection in that viscus was much more likely to take place. He mentioned three general avenues through which infection might enter the gall-bladder. (1) From bacteria circulating in the genital blood stream and reaching the liver through the hepatic veins; (2) by the direct passage of bacteria into the common bile duct from the duodenum: (3) by the transportation of bacteria from the intestine through the portal circulation. He then recurred to the frequently quoted statement that 95 per cent. of gall-stones did not produce symptoms, and showed from his own series of cases that in at least 50 per cent. there were varying symptoms from undoubted attacks of colic and jaundice to less pronounced gastro-intestinal symptoms. To justify operative intervention in cases which were not producing well-defined symptoms, the mortality and morbidity should be very low. In his own experience no death had occurred, nor had there been any serious complication referable to the secondary operation. In lieu of the fact that the additional operation did not seriously jeopardize the life of the patient, and also because he had seen two patients die from cholelithiasis a year or more subsequent to an abdominal operation, in which, had the routine exploration been made, the gall-stones might have been easily removed, he believed that the best interests of the patient would be conserved if the gall-stones were removed as a secondary part of another operation, in the event of their being found. He appended the history of 12 cases to his paper, in which the various operative points, as well as the significant facts in symptomatology were elaborated.

Kolalin.—Dr. R. Stansbury Sutton, of Pittsburg, said that gall-stones did not always produce symptoms which demanded or justified resort to operation. If they were encountered during the course of another operation, they had better be removed. There was a remedy, however, which obviated the necessity, in some instances, of surgical intervention, namely, kolalin. He had used kolalin in dozens of cases in which he had held operation in abeyance, and did not have to operate subsequently.

Dr. George M. Edebohls, of New York, had occasion at one time to operate on a woman who presented marked dyspeptic symptoms. In addition, she had movable kidney, chronic appendicitis, and induration in the region of the gall-bladder. He anchored the kidney, removed the appendix through a lumbar incision, pulled the gall-bladder into the lumbar wound, and found the stone about 4 or 5 cm. in length, pear-shaped, and nearly filling the gall-bladder. The attending physician was positive that the gall-bladder did not produce symptoms of stone in it. He would not let him remove the stone from the gall-bladder. A year later he opened the woman's abdomen for some other condition, making an incision near the gall-bladder. He investigated the gall-bladder, found it was perfectly healthy, and that the large stone had either passed or had been dissolved. The treatment after the previous operation consisted of the use of olive oil for about a month, and whether this had anything to do with the passage of the stone, he did not know. At any rate, the stone had disappeared and had left no trace of its former existence.

Dr. A. Palmer Dudley, of New York, emphasized the importance of looking beyond the gall-bladder for trouble. He believed that stones were formed in the liver ducts themselves, and that from a stagnant circulation cholesterin nuclei formed, and that only a small proportion of stones were found in the gall-bladder. He would not hesitate to go into the center of the liver. In fact, in the last case he had, in which the diagnosis of gall-stones had been made by a medical confrere, he boldly went into the gall-bladder, but found no stone. He found the duct dilated; he went five inches into the right lobe of the liver, as far as he could reach with his finger, and packed the liver full with iodoform gauze, put an apron of gauze over it, and the patient was well to-day. He would explore the center of the liver in searching for such deposits.

Dr. Brooks H. Wells, of New York, said that in the last few years he had used practically the same measures as those outlined by the essayist. A number of patients coming under his observation had complained of obscure symptoms, of so-called functional indigestion. In them he found either disease of the gall-bladder, an over-distended gall-bladder from obstruction elsewhere, or trouble referable to gall-stones. By making a small or large incision, as seemed necessary, cleaning out the gall-bladder and draining it, the patients had obtained remarkable relief from the symptoms that were supposed to be due to functional indigestion.

Dr. Seth C. Gordon, of Portland, Me., said that when the abdominal cavity was opened for other purposes, and he was quite sure the patient could stand it, he would examine the gall-bladder thoroughly, and if gall-stones were found, he would remove them. He cited cases in support of this line of reasoning.

Dr. Hiram N. Vineberg, of New York, said that under the influence of the teaching of Kelly he had been in the habit of doing what had been advocated by the essayist, but after hearing a discussion on gall-stones in the common duct and in the gall-bladder by one of the Mayos, he had changed his method. Simply opening the gall-bladder and removing the stones did not effect a cure, as proven by three or four cases that occurred in his own practice. If the gall-bladder was diseased, however, it should be removed.

Dr. J. M. Baldy, of Philadelphia, said that gall-stones existed in the gall-bladder for years without causing any material discomfort, but that when infection occurred they were liable to give trouble. There was not the slightest question but what large numbers of cases of so-called stomach trouble, or chronic indigestion, sooner or later proved to be cases of gall-stones or of gall-bladder disease. With reference to removing gall-stones when operating for some other intraabdominal condition, the surgeon should consider the physical condition of the patient, the surroundings, etc., and as to whether the patient was willing to undergo the additional risk of a second incision for the gall-bladder operation.

Dr. Walter P. Manton, of Detroit, quoted Ochsner as saying that he had tried almost everything in the so-called cases of chronic dyspepsia, without affording relief; yet after opening their gall-bladders and removing gall-stones which were found, the patients were cured. Dr. Manton had seen a number of such cases, and contended that the removal of gall-stones, or the gall-bladder, if diseased, was the thing to do. He did not believe there was any solvent ever invented which would dissolve gall-stones.

Dr. Beverly MacMonagle, of San Francisco, Cal., stated that when the abdomen was opened for some pelvic or abdominal trouble, the operator should investigate the gall-bladder. If gall-stones had been making the patient ill, causing dyspepsia, or if there were adhesions around the gall-bladder, one should operate.

The conditions that arose in the pancreas as a consequence of gall-bladder disease and of gall-stones were serious, and if the surgeon could do something of a prophylactic nature, without adding to the risk of the patient's life, it was a wise thing to do.

Dr. Clark, in closing, said the formation of gall-stones through bacteria had been clearly demonstrated by a series of experiments. He did not believe anyone would strongly advocate operation unless the gall-stones were producing symptoms.

Ovarian Pregnancy.—Dr. J. Clarence Webster, of Chicago, reported a case of ovarian pregnancy. There was a right ovarian irregularly rounded swelling, measuring 7 by 8 cm. There was no evidence of rupture into the peritoneal cavity. The adhesions were recent. Sections of the ovarian swelling consisted mainly of extravasated blood and disseminated fragments of the chorion. No evidence of transformation of ovarian connective tissue into decidua was noted. It was certain that the pregnancy did not start in a Graafian follicle.

Dr. J. Whitridge Williams, of Baltimore, said there was no doubt that ovarian pregnancy occurred, but it was the rarest of all forms of extrauterine pregnancy. In regard to the Müllerian origin of ovarian pregnancy, he was not quite convinced of it. While there was no doubt that Müllerian tissue might be found in the ovary, as mentioned by the essayist and confirmed by numerous observers, he thought it was going too far to advance that view in explanation of every case of ovarian pregnancy.

Dr. John T. Thompson, of Portland, Me., referred to a case of ovarian pregnancy he had reported at a previous meeting of the Society. He called attention to the nature of the structures in which pregnancy occurred, and to the frequency with which rupture might occur in the early days.

Dr. Edward P. Davis, of Philadelphia, removed an ovarian pregnancy about a year ago, the histology of which had not been completely worked up as yet, although a diagnosis was made very early of the nature of the tumor from the enlarged ovary. The indications were that the pregnancy did not originate in the Graafian follicle.

Dr. Lapthorne Smith, of Montreal, had diagnosed ectopic pregnancy by the clinical symptoms; had operated, and found hematoma of the ovary. He had said to his students that he was sorry that his diagnosis was wrong, because authorities maintained that there was no such thing as ovarian pregnancy, but after hearing what had been said he was convinced there was.

Uretero-lithotomy.—Dr. J. Wesley Bovée, of Washington, D. C., in a paper on this subject, gave the history of the operation, and then discussed the size and number of calculi. The routes for reaching and extracting ureteral calculi, he said, were the transperitoneal and the extraperitoneal. The latter might be subdivided into loin, inguinal, vaginal, rectal, sacral, perineal, and transvesical. The transperitoneal route should never be the one of election, as the danger of peritoneal infection from the urine was too great. Of the extraperitoneal routes, the selection would depend largely upon the location of the calculus or calculi, although the operation of Ceci of removing it through the rectum should only be considered justifiable when the stone had practically sloughed through into the rectum. In a class of cases characterized by the stone having been lodged in the intravesical portion of the duct and later sloughed into a pocket in the bladder wall, which it had made for itself, the vaginal and inguinal routes were the only safe ones, although in so stating he was not unmindful of the number of cases in which suprapubic cystotomy had been done. He discussed the removal of the calculus from the ureter, and the methods for so doing; also the treatment of the ureteral opening. Speaking of drainage, he stated that all ureterolithotomy wounds should be drained. This was because the urine was practically never normal, therefore rendering wound infection probable. The possibility of urinary leakage subsequent to operation afforded another positive indication for drainage.

Nephrectomy for Primary Tuberculosis of the Kidney.—Dr. Hiram N. Vineberg, of New York, read a paper on this subject. Tuberculosis of the kidney, both primary and secondary, was more frequently met with in women than in men in the proportion of about two to one. It was different from what occurred in men; renal tuberculosis in women was rarely associated with tuberculosis of the genital organs. A cystitis in women that resisted the topical applications of the silver nitrate solution by the Kelly method should be looked upon with marked suspicion as being of tuberculous character, even though repeated examinations of the urine should show an absence of the tubercle bacillus. The differential diagnosis of a non-tuberculous from a tuberculous cystitis with the aid of the cystoscope was not as reliable as the therapeutic test outlined in the preceding sentence. Pronounced reddening or ulceration about the mouth of one of the ureters, with absence of other bladder changes, was held by some authorities as pathognomonic of tuberculosis of the corresponding kidney; while the sign was an important one, too much weight should not be attached to it in women. In most cases the removal of the diseased kidney would bring about practically a cure of the descending cystitis. He doubted the wisdom of the advice to cure the cystitis before undertaking the removal of the kidney. In women, owing to the fact that the disease was most frequently primary and unilateral, the modern tests for determining the functional capacity of the second kidney were not as essential as in men. Catheterization of the supposedly healthy kidney was a procedure to be avoided, when, as was frequently the case, there was associated a tuberculosis of the bladder. The prognosis of nephrectomy in renal tuberculosis in women was exceedingly good. Of the writer's four cases operated upon, seven, five, two, and one and a half years ago respectively, all were alive and in good health.

Dr. Joseph E. Janvrin, of New York, reported a case of a woman who had been ailing for two years with what was supposed to be a renal calculus. Before operating, Dr. Willy Meyer examined the woman, and agreed with him that the case was probably one of calculus in the pelvis of the kidney, with possibly calculi in the ureter. The kidney was removed, and it was found that its pelvis was infiltrated with tuberculous deposits in the very early stage. The patient made a good recovery and was well to-day.

Dr. J. Wesley Bovée said that if one read the proceedings of the late meeting of the German Congress, he would be impressed with the comparatively large proportion of cases in which primary tuberculosis was found in both kidneys, or the very small proportion in which one kidney alone was involved. As to the indications for operation on tuberculous kidney, the surgeon should be sure that the opposite kidney was capable of carrying on the function of excreting urine for the whole body before he decided to remove one tuberculous kidney. A nephrotomy might be done, and the kidney most markedly diseased drained, without taxing the other kidney to a great extent. As regards cystitis in tuberculosis of the kidney, it was a late, not an early, symptom.

Dr. Philander A. Harris, of Paterson, N. J., said that in cases of tuberculosis of the kidney it was difficult,

where the bladder was corrugated and changed by the pathology present, to find the ureter; but by painting the entire field of the bladder with some solution sufficiently colored with a swab, as Prussian blue, he had succeeded in finding the ureters in the case of a girl which he could not otherwise locate.

Dr. Seth C. Gordon operated on a man, removing a kidney which was situated low down in the abdomen, painful, and bound down by adhesions. The patient died eleven days after the operation, and post-mortem examination showed that the man had no other kidney. Two years afterward he removed a very large kidney from a woman, who lived twenty-eight days after operation. For twelve hours she did not have a single uremic symptom, nor was a drop of urine secreted, and she died in full possession of her faculties. Post-mortem examination revealed that she had no other kidney.

Dr. J. M. Baldy said it was not uncommon to have medical men in the wards of the Policlinic ask if the ureters had been catheterized in the cases of supposed kidney disease, and not infrequently a perfectly healthy kidney was palpated and found on one side which utterly failed to secrete with the patient under an anesthetic or without it. In some instances this failure on part of the kidney to secrete was undoubtedly brought about by the influence of the anesthetic. At any rate, anesthesia would reduce the quantity of secretion very materially. He had had exactly that same experience a number of times in patients whose ureters he had catheterized, but to whom no anesthetic had been given.

Dr. George M. Edebohls said that some four or five years ago he read a paper on "The Other Kidney and Contemplated Nephrectomy." In it he advocated that before removing a kidney an incision should be made on the opposite side to determine by actual inspection and palpation, first, the presence of another kidney, and, second, its probable health, so far as could be determined macroscopically, before removing the diseased kidney. In spite of the advance made in diagnosis, and its limitations in kidney diseases, he had adhered to that rule in all nephrectomies performed since that time, and in one case he had saved a woman's life by so doing.

Dr. J. Riddle Goffe, of New York, reported a case bearing on the removal of the ureter in connection with tuberculosis of the kidney, the patient having been operated on by him in 1896. She was a woman, twenty-two years of age, who had a very large tuberculous abscess of the right kidney. He removed the kidney and three inches of the ureter. She made an excellent recovery, excepting that she had a sinus which lasted four months and then healed. Patient was now a graduate nurse and in perfect health.

Dr. Edward Reynolds, of Boston, gave his experience of 10 nephrectomies for tubercular disease, 7 of them being complete nephro-ureterectomies, all successful, so far as operative mortality was concerned.

Hypertrophies and Inflammations about the Urinary Meatus.—Dr. Robert L. Dickinson, of Brooklyn, read a paper on this subject, saying that their frequency, and the suffering caused gave them an importance out of all proportion to their minute size. Overlooked because hidden among folds of mucous membrane. They were explained by embryology. A tiny ribbon ran from the rear of the vaginal opening forward, on each side of the vaginal and urethral openings, across the vestibule to disappear beneath the clitoris. This fold was persistent in those cases where the hymen ran forward of the meatus, or the meatus seemed to open on the anterior vaginal wall. This fold was enlarged by friction or traction to produce flaps or labia, hanging out each side of the meatus. They were found only with corrugated labia. Dilated or dilatable urethra often accompanied them. The urethal glands opened near the apex of the flaps. They were long, running down into the anterior column of the vagina. Swelling from infection differed from hypertrophy. The cure of chronic inflammation was only feasible by obliteration of the glands. A fine probe passed to the bottom of the gland rendered the vestibular-vaginal surface tense; the cautery wire cut out the probe. For piles of the meatus, the cautery wire was used after cocaine; for prolapse or dilatation of the uretha, resection of the anterior vaginal wall or paraffin injections into the urethrovaginal septum produced a sigmoid profile.

Surgery of the Female Urethra.—Dr. Ely Van de Warker, of Syracuse, N. Y., read a paper on this subject. The urethra, he said, appeared like an insignificant part, its vital relations were negligible, its anatomy was relative, and acquired its importance from its related organs, but it might be said to epitomize a large share of the suffering that woman's pelvic organs inflicted upon her. The amount of disturbance caused by a simple irritation of the urethra to the bladder and indirectly to the kidneys afforded striking proof of the validity of reflected nervous disturbance. The term sacculation was regarded as better than the old one, urethrocele. Its major cause was mechanical, as inflammation alone was not adequate to its production. The urethra might be said to belong to the perineal rather than the pelvic zone of organs. The walls of the canal depended in a measure upon the support of the perineal body. It was often associated with long-standing rupture of this part. Restoration of the perineum was therefore essential to treatment of the sacculation. When large, an elliptical flap of the walls of the urethra was removed and the edges brought together by fine silk sutures. Prolapse of the mucous lining of the urethra the author had generally associated with long-standing urinary troubles of various kinds. It was therefore probably due to a gradually progressive condition, and was a typical ptosis, and complied with the general law of genital prolapse. After removing the prolapsed portion there was a marked tendency to recurrence unless the conditions which gave rise to it were treated and cured. Bladder incontinence and dribbling were often lifelong conditions. That this was due to a defective action of the sphincter vesicæ was more than doubtful. Dribbling was one of the symptoms of hysteria, of which a striking case was given in illustration. Narrowing, by operation, the bladder and end of the urethra, linear cauterization at this point, had afforded relief. Any treatment was liable to fail, and relapses were frequent. The powerful influence of hysterical disturbance over the urinary tract was constantly observed. Dribbling was the related phase of retention. The treatment of this form was more satisfactory. The urethral stricture, when of small caliber, was frequently found with dysuria and dribbling. The author referred to but two cases of urethral mucous polypus and concluded that they must be rare. These growths ought never to be twisted off, as the tissues were too friable. Removal of the growth through the mucous membrane, so that no stump was left, was the proper procedure. Stricture of the urethra, in the author's experience, is common in women. Any condition that tended to produce linear or annular thickening thus led to stricture. Specific urethritis might produce stricture, but it was not the frequent cause alleged by some writers. Stricture of large caliber might be located and measured by the Otis bulbs, but never by the sound, as was recommended by old systematic writers. Annular stricture of the meatus was the form most commonly met with. These ought to be incised and made to heal in an open condition by the frequent passage of the sound. Dilatation alone was

too painful and required too much time. As to eversion of the mucous membrane at the meatus, its prototype was the fusiform stricture of Otis, and its surest cure was by dilatation. Caruncle of the urethra was a common occurrence. Removal, involving the whole thickness of the mucous membrane, being careful not to leave a stump, was an effectual cure.

Pyelitis Complicating Pregnancy.—Dr. Edwin B. Cragin, of New York, said the occurrence during pregnancy of a marked rise of temperature, with pain and tenderness on the right side of the abdomen, was always a source of anxiety to the obstetrician. Although several able articles describing the condition had appeared, it was not generally recognized that pyelitis was a not infrequent cause of the above symptoms. It might be confused with appendicitis, typhoid fever, or salpingitis. It occurred almost, if not quite, invariably on the right side. It was due to pressure on the ureter by the pregnant uterus plus an infection. This infection was usually descending, and was usually due to the colon bacillus. The urine was acid, contained at first albumin and perhaps a few casts, soon followed by pus and bacteria. The prognosis was usually good. Induction of labor was seldom indicated. The medical treatment by urotropin, or allied drugs, with ice-bag over the kidney, fluid diet, and large draughts of water, was usually sufficient.

A Second Case of Puerperal Eclampsia Successfully Treated by Renal Decapsulation.—Dr. George M. Edebohls, of New York, said the first case, reported to the Society a year ago, illustrated the immediate cure by renal decapsulation of puerperal convulsions, recurring with great and increasing violence after the birth of the child, a period at which the hitherto final resource of force delivery was, of course, no longer available. In presenting the case the opinion was advanced that resort to renal decapsulation in the undelivered woman suffering from puerperal eclampsia might obviate the necessity of forced delivery. The case now reported illustrated the correctness of that opinion. Renal decapsulation was performed upon a woman pregnant near term, suffering from puerperal eclampsia, and almost complete suppression of urine. The convulsions were arrested, the flow of urine was re-established, and a threatened death from uremia was averted. Two days after all this had been accomplished labor began spontaneously, and living twins were born. One child died soon after birth. The second child and the mother were in perfect health four and a half months after the termination of pregnancy. Renal decapsulation thus became the rival of forced delivery in cases of puerperal convulsions of renal origin in the undelivered woman. In puerperal convulsions, occurring or recurring after delivery, it constituted the final resort when all other measures had failed.

(To be Continued.)

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.[1]

Sixth Regular Meeting, held April 20, 1904.

The President, S. J. Meltzer, M.D., in the Chair.

Members Present.—Burton-Opitz, Calkins, Gies, Hiss, Hunt, Jackson, Lee, Levene, Lusk, Meltzer, Murlin, Norris, Park, Richards, Wadsworth, Wallace, Wilson, Yatsu.

Members Elected.—J. J. Abel, E. G. Conklin, A. R. Cushny, C. B. Davenport, W. H. Howell, L. B. Mendel, T. H. Morgan, F. G. Novy, W. T. Porter, L. B. Stookey, W. H. Welch.

Constitutional Amendment.—The following amendment was added to the Constitution by unanimous vote: "Each non-resident member shall be required to present in person, at least once every two years, a communication containing the results of an *experimental* investigation, or to send to the President, within that time, such a communication for presentation at a regular meeting of the Society."

Eligibility to Membership.—Many inquiries regarding admission to membership in the Society have recently been addressed to the Secretary. It seems desirable to state publicly that only *active investigators* in biology or medicine are eligible to membership. The Constitution of the Society provides for *automatic forfeiture of membership* by any member who may cease to be an "active investigator, *by experimental methods,* in biology or medicine." Visitors are welcomed to the meetings.

ABSTRACTS OF THE REPORTS OF ORIGINAL RESEARCHES.

On the Secretion of Human Bile.—By P. A. Levene, W. G. Melvin and B. Michailovski. The bile was obtained from a patient with a biliary fistula. The patient had been operated upon for gall-stones, and was in comparatively good health at the time of the experiment. Attention was directed to (1) the influence of diet on the quantity of bile secreted per twenty-four hours; (2) the permeability of the biliary ducts for certain substances like methylene blue and sodium salicylate; (3) the influence of these substances and of some salts and acids on the secretion, and (4) on the nature of the so-called "bile mucin." The quantities of bile secreted under different conditions, together with other data, are briefly summarized below:

Diet and Dosage.	Volume in 24 Hours.	Total Solids.	Organic Residue.	Ash.
	Cubic Centimeter.	Per Cent.	Per Cent.	Per Cent.
Mixed diet.....	780	1.57	0.76	0.82
Animal diet.....	785	1.68	0.60	1.08
Milk diet.	845	1.61	0.56	1.05
Vegetable diet.....	835	1.64	0.80	0.84
Sodium carbonate.	461	1.62	0.71	0.92
Muriatic acid.....	461	1.53	1.08	0.45
Calcium chloride...	687	1.63	0.50	1.08
Sodium salicylate..	642	1.40	0.42	0.98
Methylene blue....	864	1.58	0.54	1.04

For methylene blue and sodium salicylate the bile ducts proved less permeable than the kidneys. There was observed a marked increase in secretion after subcutaneous injections of methylene blue. The "mucin" was found to be a phosphorized proteid, but no purin bases could be detected in its molecule.

Experiments with Certain Nitriles and Their Antidotes.—By Reid Hunt. Experiments (carried out in the laboratory of Prof. Ehrlich) on the toxicity of a number of nitriles, and the antidotal action of certain sulphur compounds toward them, were described. Most of the nitriles studied are poisonous in virtue of the HCN which is split off in the body; in the case of some of the nitriles of the aromatic series and of certain amino nitriles, the molecules themselves seem to be poisonous. Although each of nearly all of the compounds studied is capable of splitting off one molecule of HCN, it was found that the toxicity of the various compounds differed greatly. The toxicity depends in general upon the ease with which the HCN is split off; in some cases this seems to bear a relation to the ease with which the residue united to the CN group is oxi-

[1] Proceedings reported by the Secretary, William J. Gies, Ph.D., of New York. The authors of the reports have furnished the abstracts. The Secretary has made only a few abbreviations and minor alterations in them.

dized in the body. Benzonitrile, containing the group C_6H_5, which is oxidized with difficulty in the body, is scarcely more poisonous than phenol. Acetonitrile, also containing a group, CH_3, which is oxidized with difficulty, is also but slightly toxic. Propionitrile and formaldehydecyanhydrin, which contain easily oxidizable groups, C_2H_5 and CH_2OH, are very poisonous. The toxicity of the molecules of a few nitriles is greater than that of HCN itself, although the latter was the only toxic agent involved. Thus, the molecule of chloralcyanhydrin, $CCl_3CH(OH)CN$ is nearly twice as toxic as that of HCN. The probable explanation of this is that the chloral residue with which the CN is in combination causes this compound to be distributed especially to the central nervous system; the HCN is thus split off in greater concentration in these important organs than is the case after the administration of a compound which is distributed more uniformly to important and unimportant organs. Through the application of this principle it may be possible to modify the distribution in the body of a remedial agent, so that the active principle may be present in especially great concentration in the organs which it is desired to affect. It was suggested that the powerful action of nitroglycerine upon the blood vessels may be explained on a similar hypothesis. The view of Hay, that the dilatation of the blood vessels caused by nitroglycerin is due to the formation in the body of nitrites from this body, has been generally accepted, although the objection has been made that it requires two hundred times more sodium nitrite than nitroglycerin to produce a given effect. This criticism may be met by the hypothesis that the glycerin residue of the nitroglycerin causes this compound to be distributed especially to the arterial walls, so that the nitrite will be formed in greatest concentration at the point where it exerts its action.

The work of Heymans and Masoin on the antagonistic action of sodium thiosulphate toward certain nitrites was extended to many new cyanogen compounds. In addition to the thiosulphate, several other compounds containing a sulphur atom which is easily split off, were tested (the sulphur unites in the body to form a little poisonous sulphocyanate); the most efficient of these new sulphur compounds were thialdin, carbothialdin and potassium xanthogenate. Great differences in the extent of the antidotal action of these bodies toward the various nitriles were noted. Thus, thialdin, protected against nitriles toward which potassium xanthogenate was without action; toward other nitriles potassium xanthogenate was the more efficacious. Many of these differences can be easily explained on the hypothesis that the various nitriles and sulphur compounds are differently distributed in the body. Unless both the sulphur compound and the nitrile reach the same cells, and unless the conditions in these cells are favorable for the formation of the sulphocyanate, no neutralization will take place.

Especially interesting are the experiments on the antidotal action of alcohol toward certain nitriles. It was found that small doses of alcohol protected an animal against three to five times the fatal dose of acetonitrile and formaldehydecyanhydrin, and that after otherwise fatal doses of these substances, the animal recovered if small doses of alcohol were given. It was suggested that the explanation for this action may be that because it is easily oxidized alcohol consumed the oxygen usually available for the oxidation of the CH_3 and CH_2OH groups of these compounds, and for the consequent liberation of the HCN. Support for this hypothesis was found in the fact that dextrose (another easily oxidizable substance) also protects against acetonitrile.

This seems to be the first case in which alcohol has been clearly shown to have an antidotal action toward a poison. It was suggested that alcohol may have an analagous action in certain pathological conditions in which physicians have long claimed a beneficial result from its use. Toward HCN itself and several other nitriles, alcohol has no antidotal action; in fact, in some cases, the toxicity of the nitrile was increased by it.

Toxicity of Certain Quinine Derivatives.—By Reid Hunt. In one of the side-chains of the quinine molecule there is, according to the commonly accepted view, a vinyl group, $-CH=CH_2$. As the toxicity of many compounds (*e.g.*, neurine and allyl alcohol) is chiefly due to the presence of such a group, experiments were made (in Prof. Ehrlich's laboratory) to determine whether this is the case with quinine. A number of derivatives in which the vinyl union was broken by the addition of H (hydroquinine), or of O and OH (oxyhydroquinine), or of H and Cl (hydrochlorquinine), were tested as to their toxicity upon various mammals and certain infusoria. The experiments showed that the presence of the vinyl group in quinine is without special significance as far as toxicity is concerned, the first two of the new compounds being about as poisonous as quinine itself. The results of the experiments with hydrochlorquinine are of special interest; these showed that the addition of H and Cl decreases the toxicity for mammals while increasing it for infusoria. Thus the amount of hydrochlorquinine required to kill mice was two and a half times as much as that of quinine, while the former substance is distinctly more poisonous to certain infusoria than the latter. It is possible that hydrochlorquinine (or similar compounds) will be found to be more effective in the treatment of malaria than is quinine, and further work along these lines may result in the discovery of quinine derivatives which will be of value in certain diseases, caused by protozoa, in which quinine is of little value. Further experiments are in progress.

Report on the Metabolism of a Case of Diabetes Mellitus.—By A. R. Mandel and Graham Lusk. The case was a young man whose urine contained no albumin, little ammonia, only a small amount of acetone and no β-oxybutyric acid. All these symptoms are said to justify a favorable prognosis. The patient was put on three different diets for three successive periods: Diet 1. Rich cream, oatmeal, meats, eggs, butter. Diet 2. Same as 1, with 100 grams of levulose. Diet 3. Rich cream, meat and eggs. The oatmeal was used on account of the favorable results obtained by von Noorden. Diet 3 was practically a meat-fat diet. Upon this diet the polyuria decreased and the sugar fell from 8 to 4 per cent., both of which phenomena would be favorably interpreted by the clinician. But on calculating the ratio between sugar and nitrogen in the urine (after deducting the sugar fed in the cream) the relation between the two was found to be 3.65 grams of dextrose to 1 gram of nitrogen, as follows:

Date.	Dextrose.	Nitrogen.	D. N.
March 2, 1904 ...	82.7	23.0	3.60 : 1
March 3, 1904 ...	87.1	23.8	3.65 : 1
March 4, 1904....	100.7	27.5	3.66 : 1

It will be noticed that the sugar and nitrogen rise and fall together. The amount of fat fed varied but did not affect the ratio. The sugar production is therefore parallel to the proteid metabolism. Since 1 gram of urinary nitrogen represents the destruction of 6.25

grams of proteid we can calculate the sugar production from proteid. This D:N ratio is the same as that obtained in our laboratory in phlorhizinized dogs. It has also been obtained by others in the human subject, but has been falsely interpreted as indicating the production of sugar from fat. It represents the maximum output of sugar from proteid and a complete intolerance for carbohydrates. It is probably the most grievous prognostic sign in diabetes.

A calculation shows that the carbohydrates in the oatmeal and levulose were nearly quantitatively eliminated in the urine when the patient was under the influence of diets 1 and 2. The patient rapidly lost in weight and died in coma five weeks after the completion of the above investigation.

Antihemolytic Properties of the Serum of Nephrectomized Rabbits.—By S. J. Meltzer and William Salant. In studying the properties of the blood of nephrectomized rabbits it was found that bullock's serum, which is distinctly hemolytic for normal rabbit's blood, was less so for the red cells of nephrectomized rabbits. It was found further that the serum of nephrectomized rabbits contains a distinct antihemolytic element which is destroyed by heating for an hour at 58° C. On the other hand, the "washed" red cells of nephrectomized rabbits' blood are at least no more resistant to the hemolytic influence of bullock's serum than the red cells of normal rabbit's blood.

On the Influence of Suprarenal Extract upon Absorption and Elimination, with Demonstration.—By S. J. Meltzer and John Auer. In a series of experiments it was found that a previous intravenous injection of adrenalin will make a rabbit resistant to a surely fatal dose of strychnine. (Such an experiment was demonstrated before the society.) In experiments with subcutaneous injections of fluorescein it was also found that in the animal which had previously received injections of adrenalin, the greenish yellow color of the conjunctiva, mucous membranes and skin appeared much later than in the control animal. Both results might be due to delayed absorption or delayed transudation, or to both. In further studies with subcutaneous injections of fluorescein it was found that the color entered the blood later and in diminished quantity in the adrenalin animal than in the control. Among other observations it was noted that the kidneys of the control animal were colored more intensely than those of the adrenalin animal. The same difference was found when equal quantities of the stain were injected directly into the blood-stream. The lesser coloration of the kidney is therefore due to the diminished elimination by the kidneys in the adrenalin animal. Other related problems are still under consideration. But the reported series of experiments already justify the conclusion that suprarenal extract delays absorption as well as elimination. The starting point for the investigation was the hypothesis, stated by Dr. Meltzer in another publication, that since capillary endothelia possess irritability and contractility their pores are surrounded by rings of contractile protoplasm which act like sphincters upon them, thus increasing and decreasing the permeability of the endothelia. The explanation for the observed facts is now offered that suprarenal extract, which causes a contraction of the smooth muscle fibers of the arterioles, causes also an increase of the contractility of the endothelia, diminishing thereby their permeability and thus reducing their powers of absorption and elimination.

Review—Mendel's law.—By E. B. Wilson. A review of the more important facts in Mendel's observations, together with a statement of some of the deductions to be drawn from them.

SOCIETY OF THE ALUMNI OF THE CITY HOSPITAL.

114th Stated Meeting, held April 13, 1904.

Three Interesting Surgical Cases.—Dr. J. B. Bissell presented three very interesting surgical cases. The first was that of a man who presented a peculiar tumor about the size of a child's head at the right side of the neck. The second case was that of a man about fifty-five years of age who twenty years ago had been operated on for empyema. In succeeding years he had been reoperated, among others by Dr. Weir. The third case was that of a man, an engineer by trade, who presented an obscure new growth on the costal aspect of the body; right side.

Unilateral Right-sided Goiter.—The consensus of opinion was to the effect that the first case was a cystic unilateral right-sided goiter, in spite of the fact that the man stated most emphatically that it had appeared very soon after he had been almost choked while swallowing a piece of meat. It was further agreed that the case of empyema, which Dr. Bissell stated had twenty years ago undergone Eastlander's operation for removal of the ribs for the obliteration of the empyema cavity, was a most remarkable one. True, the sinus had never completely healed, but the man's life had been preserved. The opening had been made in the left anterior portion of the chest midway between the axillary and mammary lines. The heart could be seen beating vigorously against the exposed and much-thickened pericardium, and the sounds transmitted through a stethoscope, the bell of which was placed over this area, were remarkable and instructive. As to the new growths on the ribs of case three, it was uniformly agreed that they must be sarcoma, although it was noted that singularly enough the glands on the left side of the neck were involved, while those on the right side had almost entirely escaped enlargement.

Empyema.—Dr. Guiteras, in discussing the second case, said that the ever-present problem before the operating surgeon was, to wash or not to wash the pleural cavity. Personally he had always washed out the cavity and that immediately after operation, and had never yet experienced any difficulty from so doing. He employs a double catheter and almost any irrigating fluid of a mild degree of strength. Peroxide is safe to use and has a remarkable faculty for dislodging coagulæ.

Dr. G. C. Weiss considered that Dr. Bissell had done the society a great favor in exhibiting this very remarkable case of empyema. It seemed to him in a very broad way to open up the question of whether or not we should resect a rib or endeavor to drain these cases intercostally.

Dr. J. B. Bissell stated that he considered very free drainage absolutely essential. He spoke very favorably of Dr. Bryant's vacuum catheter and of James' bottles. They work on the principle that if you can't pull you may push. He considered that the question in the treatment of these cases was not so much a matter of when to wash or what to wash with as it was how to establish perfect drainage. This case of empyema in his opinion showed that drainage had not been complete, because the fistula had persisted for upward of twenty years.

Dr. A. Moore agreed as to the necessity of free drainage. He exhibited a small instrument which he has had made with the intent of inserting it in the wound which he makes without resecting any bone in order to hold the parts from coaptation and collapse. He said it resembled a Mild's retractor; it is so small that it can easily be buried beneath the

dressings and causes no pain when left *in situ*. In children particularly, if this instrument is put in position and separated with considerable vigor, a very free and adequate opening can be obtained.

Dr. Bissell expressed the belief that adequate drainage could not be obtained by the use of any instrument without resection of a rib or indeed in many cases resection of several ribs. This, the Schede method, is not as satisfactory as the Eastlander, in point of thoroughness. Bryant's tube is an ingenious device which is connected by means of a large piece of adhesive plaster to the wound, the connection being airtight. A Davidson's syringe bulb is passed from here into the pocket of the patient while in another pocket is housed a good-sized flat bottle. Throughout the day, as the patient thinks of it, he pumps this bulb and creates a vacuum in the bottle which is transmitted to the pleural cavity. This device is found in the hands of Dr. Bissell to work admirably.

Miliary Tuberculosis Following Appendectomy.—Dr. J. G. Wells reported a case of this affection in a girl of sixteen. Prior to the attack of appendicitis, which was of the usual acute type, the child was perfectly healthy so far as a very intelligent history could show. At the time of operation, however, she was found to have in addition to her appendicitis a dry form of miliary tuberculosis, the intestines being closely matted together. After some deliberation, the operator broke the adhesions holding these together, sponged the parts freely and sewed up the wound. The immediate recovery of this case was uneventful. In six weeks the abdomen was found to be soft, all rigidity having entirely disappeared, but the patient had a temperature of 102° to 104° F. Three months later, it became evident that she was a victim of general miliary tuberculosis.

Dr. Wells reported a second case. The patient was a child, five years old, a girl in whom a sudden temperature of 105.5° F. had developed. This was followed by sweat and subnormal temperature. It presented all the characteristics of a typical malarial invasion. The blood was, however, free from plasmodia. Leucocytosis, nevertheless, was marked. The skin was yellow. There was tenderness over the hepatic region. Fitz, of Boston, saw her and diagnosed cholangitis. Nothing further was done. Two weeks later she became very sick, and it then was wondered whether or not she had developed a hepatic abscess. Even in the early part of general anesthesia, the right rectus was found to be very rigid. The liver was found to be hard and blue. The gall-bladder was difficult to locate, it being on the posterior wall of the body cavity. Its distention was such that it had reached the size of a large sausage. A tumblerful of thick, creamy fluid was evacuated from it and permanent drainage established. The liver, which had been greatly enlarged, could be seen, under the eye of the operator, to shrink visibly, and within a few moments it had assumed almost normal proportions. There were many interesting pathological problems in connection with this condition.

Dr. T. F. Riley said that this interesting case of miliary tuberculosis added one additional page in the long history of proofs that tuberculosis anywhere in the body, except under unusual conditions, should be severely let alone. One of the most classic positions from which general tuberculosis is known to be induced by operative intervention is in the case of fistula in ano.

Dr. J. B. Bissell had the good fortune to operate on a great many cases of tuberculous peritonitis and had obtained gratifying results, but he makes it a point never to interfere with the adhesions.

Dr. G. C. Weiss reported in most interesting detail the case of a child in whom he had done an ordinary appendectomy. For a number of days after the operation the patient semed to be doing well, but suddenly she began to have a little temperature and almost before her attendants realized it, had developed a serious case of empyema. This was finally located by aspiration and drained by resection of a portion of the eighth rib. Secondary empyemata are rare, except from pneumonic and other infections of the lungs, but from the abdominal viscera one does not ordinarily expect such a complication. It was noteworthy that in this case the temperature went down to normal, forty-eight hours before the operation.

Dr. E. M. Sill said that in his experience this was not uncommon in the empyemas of children. He reported a case of catarrhal empyema in which the tumor was located directly in the median line.

Dr. A. Rupp, in the absence of Dr. Morris Manges, who was to have contributed some "Practical Points of Medical Diagnosis," read a short paper entitled "Paradoxical Measles."

BOOK REVIEW.

Progressive Medicine: December, 1903. March, 1904. Lea Brothers & Company, New York and Philadelphia.

Volume IV for 1903 discusses Diseases of the Digestive Tract and allied Organs, by J. C. Hemmeter; Anesthetics, Fractures and Dislocations, by Dr. L. C. Bloodgood; Genito-urinary Diseases, by Dr. W. T. Belfield; Diseases of the Kidneys, by John Rose Bradford; Physiology, by Dr. Albert P. Brubaker; Hygiene, by Charles Harrington, and Practical Therapeutics, by Dr. H. R. M. Landis. The scope and intention of this work does not need any further characterization, in this place. Practically everything that is of value along these lines is to be found in this excellent quarterly year-book. That which renders it valuable above other works of similar aim, is that more than any other, in our opinion, it shows the results of greater care devoted to making a continued story from a large number of abstracts. In some cases the authors have not been able to free themselves altogether from the purely abstract method, but in most cases the general trend of investigation is related, rather than short clippings of isolated experiences.

With the opening of the present year Progressive Medicine has undergone a certain amount of modification. The publishers have reduced the price, and are supplying it to the profession in a paper cover. This reduction in price brings the work within the reach of everybody. In the first volume for 1904 Dr. Charles H. Frazier gives a very full digest of the recent work which has been done in Surgery of the Head, Neck and Thorax, a very complete analysis of the work in Facial Palsy being presented. Dr. Robert P. Preble writes concerning the work lately done in Infectious Diseases, leaving very few aspects of the subject untouched upon. Dr. Floyd Crandall takes up the Diseases of Childhood, and Dr. C. P. Grayson abstracts the literature of Laryngology and Rhinology, and Dr. Robert Randolph that of Otology.

In its new form the same care and attention to typography are followed as in the old series, the only modification being that of price.

THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

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SPECIAL ARTICLES.

SOME ASPECTS OF MEDICAL EDUCATION.[1] [2]

BY JOHN H. MUSSER, M.D.,
OF PHILADELPHIA.

IT is no trifling occasion that draws together from the uttermost parts of the country one-fifth of an organization of a profession that is taxed to its utmost in the prosecution of its duties. It is not with sounding trumpets and tinkling cymbals that from the sorrowing bedside—whether in the hovel of the poor or the palace of the rich—from the excitement of the operating room, from the stimulus of the hospital ward or the quiet but inspiring haunts of the laboratory this assembly gathers. That it is possible is a handsome tribute to the noble animus in which are embodied a spirit of inquiry, a thirst for knowledge, a longing for inspiration, a desire to uplift and to be uplifted that pervades the profession. The event is one that should be fraught with the dignity, the inspiration, one might almost say solemnity, befitting a symphonal march. For such animus, fellow members, we have just cause for self-congratulation.

It scarcely need be reiterated here that the spirit which pervades such a meeting is the outcome of that evolution which began with the introduction of precision in medicine. Just as soon as the art of medicine had for its foundation the science of medicine, the possibility of harmonious medical organization arose. When "rule of thumb" or intuition gave way to precision; idealism to realism; when speculation was displaced by fact; when, in short, inductive methods were employed and honest inquiry became the guiding star of action, then harmony could sit in council.

With medical, as with all organizations made up of human elements, it would be only human if not pervaded by the essence of science—truth. Hence with the latter wanting, jealousies and ambitions, self and selfishness would prevail to the end that the true object of organization—a fraternal spirit and conscientious seeking for truth—would be as a flickering flame. A little observation will show that that society, whether county, state or national, that does not have this true reason for its existence, for its guide of action, will be a failure. The reverse is also true that that organization which may be called unsuccessful and unhappy, of snarling men and backbiting colleagues, can be labeled at once as without its true vocation, to the discredit of its members.

The great heights to which our organization is rising rapidly precludes the activities of such as have self for their basis of action, so that each day we see more and more a noble rivalry of its members to do the utmost and the best for the organization; a healthful vying of one another for its welfare. Self and selfishness are looked at askance; partisanship and faction, save for a common end—the welfare of the Association—are memories.

But, fellow members of the Association, at this the fifty-fifth session of our Association we have other causes for congratulation and felicitation. We are on the eve of a union of all the members of the profession in one harmonious organization, each individual of which is willing and proud to consider his fellow a gentleman until he is proved not to be, and not, as of yore, a knave until he is proved to be a saint. We are reaping the rewards of that untiring committee which gave to us this organization with which we now labor. We are prospering beyond measure and gathering a force scarcely to be estimated, in great part as a result of the untiring efforts of the apostle of organization—our McCormack. To say that thirty-four States have adopted the uniform plan of organization, and "that membership in the reorganized States has increased 400 per cent. and enthusiasm," writes our coadjutor, "tenfold more," is enough. We are standing out in our own manliness with the majesty that belongs thereto because of the sentiments expressed when our broadly inspired committee voiced the unanimity of feeling which belonged to the Association, in our principles of ethics. We are letting our light shine through the instrumentality of that genius of medical editors—our Simmons. From five thousand to twenty thousand in less than a decade is a statement of circulation which appals and at the same time arouses a feeling of pride and stimulates to further effort, increased all the more when we reflect that the scientific value of the articles in *The Journal of the American Medical Association* are surpassed by none of its contemporaries; its tone is emulated by all.

Such causes for congratulation bring to this Association greater responsibilities and weightier problems for solution. It is held to be the bounds of this address to indicate responsibilities, some trite and apparently trifling, others most weighty; to point out duties, many so grave and vast, beyond the powers of your official to justly define.

NECROLOGY.

Before passing to the task let us pause a moment and with due reverence take cognizance of our colleagues who have since our last meeting gone to the great majority. The Silent Reaper has been as rapacious as in the past, and more than fifteen hundred fell in his swath. He has spared neither the humble nor the great. The less conspicuous but just as potent laborers in the vineyard can say with the others: "I have fought a good fight, I have finished my course, I have kept the faith."

Of those who have been honored by this Association in the past we lost two ex-presidents, the hearty, rugged, yet withal gentle and kindly Donald MacLean, surgeon and teacher, and the urbane James Farquhar Hibbard, a revered general practitioner and teacher; two ex-vice-presidents in John Bates Johnson, one of the founders of the Association, a great practitioner, an honored teacher, and Isaac Newton Love, genial and magnetic. From the ranks we lost Edmund Andrews, scientist, pioneer in surgery and medical education in the West; George Julius Engelmann, obstetrician, scientist, litterateur, teacher, honored at home and abroad by membership in great organizations; James McFadden Gaston, pioneer in the surgical treatment of affections of the gall-bladder and gall-ducts, an esteemed practitioner; Franklin Staples, Hamilton Atchison West, Orpheus Everts, each obtained prominence and respect by force of character and natural attainments; Emile A. de Schweinitz, scientist and brilliant investigator, laboring not for his own renown but for that of his profession,

[1] President's Address at the Fifty-fifth Annual Session of the American Medical Association at Atlantic City, June 7 to 10, 1904.
[2] Courtesy of the Journal of the American Medical Association.

passing away at the threshold of a most promising career; Frank Savary Pearce, untiring and enthusiastic, who had been expected to counsel with us this week.

HOUSE OF DELEGATES.

The conduct of business under the new constitution bodes success. The two years of trial have indicated that to the House of Delegates the greatest responsibilities fall. When its members consider the great power the American Medical Association will have for weal or woe in the future and that the great body gives that power almost unstintingly to the delegates, they should justly realize the honor and confidence bestowed on them. With such realization will come honest purpose and deliberate action. All the county and state organizations must appreciate the vast duties to be undertaken and the breadth of view, deliberation and wisdom essential to their correct performance, and consequently select from their number the best of their possessions. Let us as an organization see to it that honor and homage come to those who labor unceasingly in the House of Delegates.

NATIONAL LIFE.

It can be readily seen that an organization of the magnitude and with the object and the spirit of our Association must in justice to itself and duty to its country take part in its social and political life. In order that we can be in touch with such life it would be well for the Association to devote some time to the discussion of broad general topics. We have provided for discussions at this meeting, the advisability of which may be termed tentative. We feel they can be productive of great good, and if the experience on this occasion is the least encouraging, we would urge their continuance. We had hoped to have government officials take up matters pertaining to the relation of the medical profession to the executive, legislative and administrative departments of the government. The exigencies of politics forbade our obtaining the services of those worthy to address this body. All men of political affairs are too busy at this juncture. At other times we may learn with profit from our rulers and law makers. As arranged for this week, so in various parts of the country in which the meetings are held, broad topics of general interest, perhaps with local flavor, could be discussed. From those in the Far West we might learn much of climate or how to conquer the plague or the medical aspect of "the yellow peril." The good judgment of the committee, or the President, can be relied on to select topics suitable to the occasion.

It is needless to refer to the demands that will be made on us by the nation in the future. You will learn through the representatives of the Army, the Navy and the Marine-Hospital Service what is expected of us. My distinguished predecessors, Reed, Keen and others, have pointed out our possibilities for good in the legislative halls of county, state and nation. We must have care never to be partisan or factional toward the weighty matters we will have to decide. We must realize that the power we have may be our undoing. We must realize that we are entering on dangerous ground and that it would better become us to be bidden rather than to intrude ourselves into such territory. Indeed, one may tremble not a little at the possibilities of our development in the wrong direction. So long, however, as we hold true to the spirit which comes out of devotion to science we need not fear.

THE SECTIONS.

The work in most of the sections the past few years bears favorable comparison with that of coordinated organizations throughout the country. To inflict discussion concerning them on this general meeting is, we realize, somewhat of a hardship. Your indulgence is craved, however, for through your medium alone can the sections be reached, while peradventure the work of these sections is fully as important as that of any branch of our Association work. If you will look into it you will find the rise of the Association came with the development of section work. To enhance the value of such work is, therefore, to uplift the organization. The present methods are worthy of trial for a few years just as we should not make haste in changing the new constitution. Regarding it, may we suggest thought along these lines?

1. The continuance of the secretary for a term of years.

2. The collaboration of sections so that one topic can be exhaustively considered at the meeting of the Association without repetition in other sections. For this purpose the officers of the sections should meet for consultation six or eight months before the annual meeting. We feel we did good work by having our distinguished chairmen and secretaries come together last October.

3. The division of the Association into two main sections for work in the mornings, that of (*a*) *medicine*, including pathology, diseases of children, nervous and mental diseases, materia medica, stomatology, cutaneous medicine and sanitary science; (*b*) *surgery*, including obstetrics, gynecology and the more closely related surgical specialties. The members interested in diseases of the eye or nose or throat could contribute to either section the result of any studies related to the respective section. The afternoons could be occupied by the specialized labor of the twelve sections now in existence.

Perhaps it might be thought better to have one morning, at the direction of the Section on Practice of Medicine, devoted to the discussion of general topics related to medicine, in which the entire Association could take part; another morning, at the direction of its secretary, to surgery; a third to the specialties; a fourth to sanitary science. The object is to secure the views of physician, surgeon and specialist on general topics. To instance a subject, as endarteritis, is to call up at once the possibilities for the internist, the surgeon and the specialist.

4. The sections should take up and organize special international congresses when the time is ripe for such meetings. Thus an International Congress of Dermatology could be managed by the correlated section of this Association. With the patronage of the American Medical Association any congress that could command such special energies and broad general support could not fail.

5. The section should name to the President a list of its members from which he could select, when asked, delegates to important national meetings or international congresses.

SANITARY SCIENCE.

The Section on Hygiene and Sanitary Science should receive greater support from the organization. It is the section which must bring us in closer touch with our national life. Through it and those devoted to it we ought to secure greater respect from the body politic, and hence more wholesome power for the welfare of the community. Through it the profession should learn to take greater interest in the work of sanitary officers throughout the country. The valuable address of Billings on "The Relation of Medical Science to Commerce" and that of Thompson on "The Economic Value of Medical Science" indicate the opportunities and responsibilities of the profession. The time has gone by when sanitary positions should be used for

temporary sources of income and obtained by political means. Such offices are growing more and more vital to the public welfare. They have not been attractive because the rewards have not been commensurate wi the responsibility and the labor demanded. They should, we will admit, if looked at from the proper viewpoint, grant large compensation and the occupant should be guaranteed tenure of office not subject to party exigencies but dependent on value received. The fault is partly ours that such is not the case. In but few medical schools is there a serious attempt to educate sanitarians, consequently the physicians who engage in sanitary science in an amateurish way do not give a *quid pro quo*. It does not pay a community to hire them. In one of the large cities of this country it has been impossible for the health authorities to get men who were competent to take up health matters, even though the city was prepared to pay fair salaries. Speculation need not run riot in estimating what would occur in a few years if our universities would give sound practical courses of a broad character, including some engineering, some economics and other features which would round out the man. In preliminary and subsequently in the elective studies the student should not be tempted to go into the special lines of practice. He should have opportunity to go in for sanitary science and perhaps for government service in the Army, the Navy, or other departments. The communities would soon find the worth of men thus educated, and the demand, we would venture to predict, would outrun the supply. In proof of the former, we may cite the fine tribute given to Wende, of Buffalo, by the citizens, *en masse* and of one accord, for the work of self-sacrifice, of unselfishness and of worth as official of the health department. Our Association could as a body and in its constituent parts encourage the medical schools to make such training possible; they could educate the community to demand such services and insist that good compensation is to be allotted for it. The Section on Sanitary Science could take up this as one feature of its work.

But for a more grievous reason, the profession's attitude, there is public disrespect. Survival of the old dictum that a patient's woes are confidential, supports too often the attending physician in failing to realize his responsibility to the community while attending to the welfare of his client. For this, as well as too often for personal reasons, he readily connives with the patient to thwart civic authority, thereby endangering a community. Instead of aiding in securing respect for and obedience to the rules of his sanitary colleague he joins in opposing him. Candor must compel us to admit that too often he fears the advent of the health official may mean some disclosure of his own incapacity. It is fair to say the official on his part is often too ready to give advice, to sneer at diagnosis or rail at treatment. To inspire, therefore, wholesome respect toward these coworkers and establish an *esprit de corps* should be one of the educational prerogatives of this section. Were we to be called to account for duties undone, the sin of not fulfilling our obligation to the community in sanitary matters would doubtless be found the most conspicuous, the one most detrimental to its interests.

Again, if not too insistent, could not this section further educational exhibits in sanitary matters not unlike the superb exhibit last winter in Baltimore, conceived and conducted in the main by our present official of the Sanitary Section? The Association could not do better than issue a grant for the furtherance of this object.

THE SCIENTIFIC EXHIBIT.

It is gratifying to see the interest and success attendant on this new feature of section work. It is another tribute to the belief in the permanent tenure of office of an official when we have the good fortune to get a good one. Attention is particularly called to this exhibit to ask the Association and the other sections to look to the conduct of somewhat similar exhibits. The Section on Ophthalmology showed the possibilities at the time of the Helmholtz anniversaries. When a section takes up a subject let us not have the clinical, pathological and therapeutical aspects alone discussed, but bibliographical and historical features brought out. Let such features be as national as possible. What a fine exhibition it would be to have in connection with, say typhoid fever, a loan collection of the pictures of authors and investigators, of the various editions of their works and of the material things with which they worked, illustrating the evolution of their knowledge of the subject. Who would not be thrilled by a picture of the wards of the old Pennsylvania Hospital where Gerhard worked, of the instruments or materials he worked with, how he lived and what he did; of the first editions of his works, indeed of the manuscript of them? We must confess to a quiver of delight, mingled with reverence, when permitted to handle the manuscript on which Stillé inscribed his communication to the Paris Society. This is not the time or place to indulge in a homily on the value of such exhibits, agreeable though it might be. Through them, as of biography and sculpture and painting, we keep in touch with our history. Foster efforts in these directions, gentlemen of the Association, grant liberally to sections their small demands on you, to the end that you will be stimulating the best instincts in our profession.

THE ASSOCIATION OF LIBRARIANS.

We are not far amiss when we call attention to an organization which in a quiet, unobtrusive way is bringing together the members of the profession on a common ground, where tares do not spring up and thistles do not blossom, but instead in an atmosphere clear, refreshing, invigorating. Jealousies do not thrive in libraries; books soften ambitions. No stronger, more liberal friendships can develop than those that come to book lovers. We owe a debt of gratitude to the Library Association and to its distinguished president, under whose fostering care the influence and power of the Association are unfolding as the hardy rose, exhaling like it a fragrance which cheers and stimulates. Of the many abundant works we owe him, none, we venture, will be more satisfying to him and more lasting for good than the work of the Association of Librarians. This Association should hold not its hand nor stint its heart in upholding its educational efforts.

THE RUSH MONUMENT.

Before this session adjourns, by proper ceremony, graced by the presence of the President of the United States, with an oration befitting the occasion by our distinguished colleague, Dr. Wilson, the monument erected by the Association to the memory of Benjamin Rush will be dedicated. The Association is to be congratulated on the completion of this tribute in perpetual bronze to one of the most distinguished of our countrymen. Not alone should we rejoice on the fruition of this agreeable task, but also because it augurs for the erection in the future of tributes to the memory of others full worthy of our reverence. The invigorating, stimulating influence that comes from having about us our heroes of the past in stone or bronze behooves this Association and its constituent bodies to strain every effort to encourage in this manner hero worship. It is due ourselves to perpetuate the inspirations, the thoughts, the feelings in the counterfeit presentment of our fellows. We are not of those who decry the world

because it has not recognized our Jenner, our Pasteur, our innumerable heroes either by reward in their lifetime or by permanent tribute. We do not begrudge the meed of praise and the plenteous bounty which flow to our warriors and statesmen. It is true, their glory has been attained often by carnage, lives sacrificed to avenge some insult. It was not life that was at stake. It was principle or thought or feeling or, our misanthrope suggests, greed. What countless lives are sacrificed for aspirations; what thousands of innocents for national gain! So, to the actors who stand for such, unstinted regard is given. The public neither appreciates the loss nor the saving of life. Hence, so long as it does not come close to them, civic murders from bad hygienic conditions do not move them. Even when home is devastated they submit to that which they consider mystifying or providential, and merely go their way. They are callous beyond measure to the presence of epidemics. They do not consider for one moment the power they have to assuage the virulence or even wipe out the existence of pestilence. Every effort for amelioration, as we see in tuberculosis, comes from our profession. With such lack of appreciation of their own welfare we need not expect much appreciation from them of our efforts.

In all honesty, we must admit among ourselves, we may not deserve public appreciation. If we realize the truth we may make amends. Could the public be expected to revere and respect when, as usual in the past, perhaps too common now, the profession was divided against itself, not from principle but generally because of pocket, of sordid ambition, of devouring jealousy? Look ye to your county societies! Do the brethren dwell together in harmony? Go to the warfaring court rooms! Do we emerge from them respected and respectful of one another? Until such sores are healed, as they happily will be, when science—and hence liberality of mind and largeness of heart—is furthered by associations like ours, it must remain to us a cherished heritage and privilege to worship our heroes alone. When we learn to respect ourselves, then will we be respected.

MEDICAL EDUCATION.

The object of this Association shall be for the purpose of elevating the standard of Medical Education.

This Association has been, should be, and we trust will be the storm center of legislation for reform in medical education. Since the memorable editorials of Wood in the old *Philadelphia Times*, and the masterly papers and addresses of Pepper and the practical action of the University of Pennsylvania there has been virile progress. In most respects it seems definitely settled as to the course of education a candidate for the degree of medicine should take. Questions of pedagogy are still debatable, but we take it that that student who wishes the quickest returns, the most lasting remuneration, perennial stimulation of the intellect and continuous enjoyment in the pursuit of his labors, should take a college education of three or four years, a four years' course in medicine and, if possible, a hospital internship.

Reference need only be made to the reports to this Association, to the famous report of the majority committee of the Association of American Medical Colleges, to the numbers of the *Journal of the American Medical Association* comprehensively devoted to education, and to many recent admirable addresses in support of the statements.

There is talk about maximum and minimum requirements, about laboratory and hospital courses, the merits of didactic and clinical teaching—a mass of material brought forth from the viewpoint of the educator, or looking to the welfare of the medical profession. We do not minimize the value of such lines of discussion. It has brought us to the position we have attained. But what of the medical student? Should we not look at education from his point of view? Is he quite able to decide whether he should take up the profession of medicine? We hold that a great duty is due the aspirant for medical honors from teacher and practitioner. It is a kindness due him to point out the best methods of securing such education as will yield him results commensurate with the time and expense required. It would be a greater kindness to be enabled to show him that by reason of intellectual temperament or of physical or moral qualities he is not likely to reap the rewards he is anticipating.

The large majority of medical students do not have a good reason for studying medicine. They are ignorant of the mental and physical demands made on them. They are attracted by an uncertain glamour and a specious glory, and heedlessly they go in. The failure of a large percentage of graduates in medicine to acquire more than a bare existence, and too often not even that, proves that they were not educated properly, not fitted temperamentally or physically, to pursue its duties. Should they not have opportunity for learning of the responsibilities and difficulties, rather than to have the brighter phases glorified? Would it not be well to have in our college curriculum a course of lectures for the student who contemplates entering a profession, pointing out the rocks and shoals in his prospective career? An eminent practitioner, not connected with medical schools, would light up and darken the pathway in due proportions. Then, too, should not, as in the Army and Navy, some physical tests be required? The trophy is to the robust, and sad will be the career of the man who is physically handicapped.

If there were any doubt about the value of a college degree to a man entering the medical profession it could be set at naught since the report of the Mosely Education Commission. Quotations like the following, while not pertaining to medicine alone, the result of extensive inquiry and mature deliberation, supported by the statistics they give, uphold the contention of a large employer, that "for 99 per cent. of the non-university men, it is hopeless to expect to get to the top." One opinion they express is that "there is still room for the boy of marked ability 'to come through,' but that his difficulties are greatly increasing, and that, useful as he is, his usefulness would have been greatly enhanced had he had the benefit of a college training." Still another commissioner reports that while only "one per cent. of the entire population of America has received a higher education in her colleges and universities, this one per cent. holds more than 40 per cent. of all positions of confidence, of trust and of profit." It is well known that the "geist" of the individual brings success, for which they say "it is recognized that the educated man takes in a wide horizon and puts more 'soul' into his work."

The essential of success in any department is diagnosis, which requires powers of intellectual penetration and discrimination. President Thwing has again forcefully urged that "the reasoning of the mathematics—and mathematics is only reasoning—tends to promote *clearness* and *accuracy in perception, inevitableness in inference*, a sense of logical *orderliness*. The study of the languages represents the element of *interpretation*. The study of history means the interpretation of life." Are these not the main studies of a college education? While they may promote scholarship, they surely cultivate thought. It need scarcely be pointed out to this

audience that to be a thinker is the salvation of the physician.

To the plea that the acquirement of a college degree takes up too much time and requires too much money, the material answer can be given from other sources to the effect that "the men whom you are surprised to find holding such important positions in factories, though not much over thirty years, are the very men who did not leave the technical college till they were twenty-three or twenty-four; the graduate may have been twenty-five before he donned a jumper, but in five years he learned more with the college training he had as a foundation than the regular journeyman of fifteen years of actual work in the shop." The experience of teachers who have watched the alumni agrees in that the college graduates get quick returns and soon acquire a position of independence.

The poor boy, therefore, need not be deterred, for if he has the spirit and energy to work his way through four years, two years or three years more will be but very little in the final summing up. If the student only knew that the purchase of the best education, whether reckoned in time or money, was the most economical investment, in that as to the former, a thorough education at first is time-saving in later years, and as to the latter, the money outlay is returned more quickly, in more immediate work and larger pay.

There should be one educational requirement—the equivalent of that for which a first-class college degree stands, whether received at a high school or university.

After entering the medical school with, it is presumed, the proper educational attainments, his career the first year should be closely watched. That school has too many students if it does not have enough instructors in the first year to be able to judge with a reasonable degree of accuracy of the character and moral stability of the men. This is not to be taken in a prudish sense or with too critical a scrutiny of habits which are the overflow of the animal spirits or the expiring exuberance of the boy approaching manhood. This can be said that a student who does not play fair in his exercises, who cheats in one demonstration or evades another, who does not show manliness, frankness and truthfulness in his first-year duties, will not be a good diagnostician. He will cheat himself; he will cheat his patient. The teachers of the first year, or at least the second, should know this and block the student there and then. It would be a kindness. Let us then agitate whether we should not have a certificate of manliness, a certificate of health as well as a certificate of mental proficiency, before we admit students to our medical schools or permit them to go beyond the first year. Let us not be decoys, alluring them on to later destruction, but rather be guardians, wrapping the strong arm of experience about them to lead them to the fitting pathway.

Having permitted the student to pass further in his pursuits, we still owe him much. We must see to it that such course is given him the first two years of his student career that he will acquire such fondness for the science of medicine, such reverence for the exploration of its truths, that until his dying day devotion to it will be his stimulus and solace. As a corollary, we must insist that medical schools secure the best men in the market for these places and pay them salaries commensurate with their ability—good living salaries.

It is in the first and second years of his career that the foundations are laid whereby the student becomes the medical thinker. To quote again: "The power of thinking should not be of a base and barren character. The thinking should represent and be concerned with a fine and rich content of knowledge. It should have the exactness of intellectual discrimination; it should have the fulness of noble scholarship; it should embody a culture which is at once emotional and esthetic and ethical, as well as intellectual."

That a desire to relieve suffering, to extend sympathy, to save life, is the impulse of the physician, we all admit, but where is the man among us who will not also admit that a scientific habit more quickly brings it about and more surely sustains and fortifies the humane instinct through the trials and tribulations of exacting practice? That prosecution of professional duties soon becomes commercial that does not have for its basis a true spirit of scientific inquiry. How miserable must that life be which conducts an exacting, drudging, daily routine with only material reward in view. Few are the practitioners who have this sordid view; we can be as sure medicine would soon be forsaken if this viewpoint alone were considered. Hence in the laboratory of the first two years must be aroused and fostered the stimulus for lifework.

The final years should be clinical years, and the last should be in a hospital. The medical school that allows its students to think such opportunity is not due them is most unfair to them. As our schools are now constituted, most of them can not give such requirements. The students should know, however, such requirement is necessary. What has been said regarding the preliminary college education applies equally forcefully to the hospital training. He is thrice armed who enters the arena thus equipped. Medical schools that cannot give such education are cruelly unkind and unjust to the students by having them think it is not essential. Medical colleges that pass off a hospital training for one that is not truly such, fake their students. The student who pays well for his training has the right to demand such as to fit him for immediate action.

It is not the fault of the medical school alone that he can not get it. The public that cries out when there is mistake in diagnosis, fault in treatment, and that shakes its head at the deficient education of our students, must share the blame with the medical school. The public admits that its individual members may at any moment almost be at the mercy of a half-educated physician. It is not necessary to recount, for it is well known, how on land or sea, by day or night, some event may arise in an individual life, the care of which may mean life or death. Even with this knowledge they withhold means to relieve themselves. They admit the necessity of a hospital training. But they, and particularly the public in control of hospitals not used for teaching, say each medical college should have its teaching hospital. They do not appreciate that to give an education which involves a hospital course would require an expenditure of $500 a year for four years by each student. It has been estimated that the cost of maintaining a plant and paying salaries sufficiently large to accommodate 600 students would require the above outlay by each student. Unfortunately, it is impossible to expect students to pay such figures, as it would render entrance into the profession almost prohibitive. It is manifestly impossible, as medical schools are constituted now, to educate all the students of the land properly. Hospital training can not be given except by a few favored institutions, because the doors of hospitals are closed either by the governing body of the hospital or by the teachers in the medical schools.

We believe, personally, if a decree should be issued that no medical school, including its hospital, should exist except on the fees derived from students, but little hardship would follow. The lessened supply of students would increase the demands on the practitioner, so that larger returns would follow. The poor student would sacrifice and strive to get a degree, knowing then

he had a good asset. A diminution in number and an increase in quality is demanded alike by the public and the profession. Such diminution in number would mean that the student would get back his investment quicker and in larger amount than at present, hence good men would be attracted. If we could abolish sentiment for sense and educate accordingly, there might be betterment all around. As it is now, medical students receive part of their education through the bounty of the state or the charity of the public, as such education can only be given in endowed institutions. The public is taxed so that the prospective physician can make a living. Is it right that it should be? Perhaps a mechanic should demand such right to make his son a good workman. We must all admit it is the duty of the state to educate the youth, so that good citizenship is maintained; we can question whether the state should educate the members to obtain a livelihood.

With the same indifference that the public views an epidemic's march they allow hospitals that are engaged in teaching to suffer for the want of funds. Moreover, they close their doors to the advent of teaching in the hospitals under their control. We must admit those who do not appreciate the true function of a hospital have some ground for their contention. Ruled by sentiment chiefly, unfortunately an impracticable master, they sympathize with the patient who still harbors the belief of old that the medical student is one of a class that prowl about not unlike harpies. The public does not realize the difference in the student of to-day and the student of tradition. We cannot hold to account the governing body of the hospital who has the point of view that it is harmful to a sick person to have them under the surveillance of an alleged student rabble. We must admit some patients become alarmed, particularly in institutions where they know they will have the sympathy of the governing body. An analysis of motive will show that the usual patient who will not allow a judicious amount of clinical demonstration when the sense of delicacy is not offended, is truly selfish, in that there is prevented that increase of knowledge and development of skill whereby suffering of others may be alleviated. A little encouragement from the officials would allay alarm on the part of the patient. The desire to help others is infectious, and when one yields in a word, others vie in the work.

The truth of the matter is that in hospitals in which teaching is carried on, rarely, if ever, do the patients complain. Indeed, it is the experience of those teaching institutions that judiciously conducted instruction is appreciated by the patient. In one hospital we might name most of the inmates are pay patients, giving $7 a week willingly, because they know they are buying the services of the best practitioners in the land—the teachers of medicine—which service they could not get at tenfold the figure. The fact that teaching hospitals are overcrowded, not by the poor alone, but by people independent of charity, shows that clinical instruction is not a bugbear. If the governing boards would know that while a few patients might be alarmed, on the whole most of them would be gratified by the attention paid them, and their sense of rectitude and manliness appealed to by the satisfaction that they are doing some good in enlightening students, so that others could be relieved; that their administration would be stimulated to do work beyond criticism; that the nurses would be aroused to better activity while under the observation of those not connected with the hospital; that the interns would do their very best to have most complete studies of the case, and finally, that the chief in attendance, compelled to do his best at the risk of his reputation, they would gladly open their doors, even at the discomfort of the few, but to the advantage of the many. In short, the hospital should have teaching not to oblige the medical school, but for its own survival and regeneration. The benefits the student derives by the object lesson of an orderly hospital can not be estimated. Will not every member of a hospital board admit that his own character, his own sympathies, have been benefited by his connection with the hospital, even though, perhaps, he has not the advantage of an impressionable age? Can he not see, therefore, how the youthful student can be influenced in thought and character and feeling? He cannot lightly toss aside this responsibility, nor even hide it by putting the onus of medical education on the teaching hospital. Every dollar endowing a non-teaching hospital robs the teaching hospital which is engaged in this larger duty.

It is true a class who are compelled to have hospital attention may not sympathize with this feeling. How can we obtain the confidence of this class? Let us organize such association of prominent people in our teaching centers who will agree to have any operation, any feature of disease witnessed by medical students, at the judgment of their attending physician. It would be well if the individuals of such an organization would agree, first, to undergo hospital treatment; second, to be the object of observation by students; third, to have an autopsy performed in case of untimely end. We feel sure that it would be wholesome individually and publicly if each would agree to ward treatment. Such association would rob hospitals of their terror and teaching of its dread. No one can deny that on the whole the public would be benefited from whatsoever point of view we look at it. Indeed, the public ought to learn that disease is an enemy to themselves and their country. Just as we make sacrifices in time of national warfare, so we should be willing to make sacrifices in the daily battle for life. Just as aristocrat and plebian, landlord and tenant, fight side by side in the former, so they should array in solid phalanx in the latter.

But there are hospitals willing to admit students, and yet the privilege is not availed of. This arises because the teaching force of the medical college is not willing to sink its personality and allow the student to go wheresoever he will for his instruction. Courage and some sacrifice is required perhaps. But, when one thinks of the mighty opportunity and the frightful waste, it is saddening. Every hospital should be a school. The fourth year should be so arranged that the student could avail himself of the advantages of hospitals in the immediate vicinity. Let each teaching body have the students understand what he must see and do, and trust you the true student will see it at the best place and with the best men. He must be accountable, of course, with a rigidity that means the exact acquirement of knowledge. To this end the first two years could be well spent in the properly equipped laboratory university, whether in town or country, the third in the authorized hospital of the school, the fourth in extramural hospital work.

Is it not anomalous that the hospital boards give to the nurses who are to act as aids to the physician the highest opportunities, and yet deny it to those who are to give orders to the nurses? This, of course, arises because training schools are the product of modern thought and have not been trammeled by tradition.

But all this talk of the primary education avails but little if we do not see to it ourselves that education is continuous; that from the day of our graduation, forwards, we do naught but toil, toil, toil. It should go without saying, as a mere business proposition, that unless we unceasingly labor but little of the fruits do we pluck. It is demonstrated in a practical manner,

for when we look about us and find the methods of those of our brethren whose labors are not in vain each one bears the scent of midnight oil.

The development of post-graduate schools, the growth of libraries, the groans of the printing press, the enthusiasm of medical societies, all testify to the spirit of persistent self-education that is abroad. It is not for me to urge further the importance of each of us taking from time to time months for study and reflection. Every active doctor should have his sabbatical year. We dare say, extended observations would support the belief that the gain is one hundredfold for each dollar invested in educational outings, and for every hour thus employed, ten is added to life. To finance a medical man from first to last successfully, we dare say, spend all net earnings of the first five years on self-education; after ten years, 10 per cent. of the annual net earnings for an assistant, continuing the 25 per cent. investment for five years. Health, happiness, increased usefulness to the community, a success, which never comes from eccentricity, equal to doubling capital every five years, would follow.

In the course of our work it is necessary for us to halt from time to time and review. Not alone must our mental storehouse be swept out, refurnished, but we must constantly "jack up," if the term is permissible, our mental and moral machinery. Few of us are there who will not find as our days grow fuller an unconscious tendency to slight our work, to become slipshod, to hurry over matters. It is partly an evidence of overwork. The post-graduate school is the salvation. No obstacle can withstand the continuity of drill, which the earnest of us keep in action. If, to continue the imposition, asked what element of character is perhaps lacking to the greatest detriment to the profession and public, we possibly, one and all, would say courage. This is seen in the hesitancy which members of the profession show in giving an opinion, in advising an operation and in asking for an autopsy. How much confidence is destroyed by the want of free, frank avowal of the physician that he does not know on the one hand, or of clear, precise statement of his judgment concerning a case on the other! The greatest success in life is confidence. How many lives are lost by the worker in internal medicine not advising early and unequivocally an operation for fear he might be wrong in his diagnosis! And how many more are lost because the surgeon lacks courage to do, either because he fears the patient may die and his record be marred, or because he may operate when it is not necessary! We must admit we have had some operations done when they were not required, but let it be said to the credit of modern surgery, we have never seen an operation of such character performed by the right man that did any harm to the patient. On the other hand, the resort to operative procedures early, and in cases that even yet are not considered of surgical relief, has saved lives and lessened suffering to a degree that far overbalances the now and then futile measure. It may be assumed, without contradiction, that every case of bad appendicitis that happens to get well without surgical relief has in its wake three to five that die for the want of an operation. In other words, the pernicious influence of a surgical case that recovers without operation is evident in creating the hope that other cases demanding operation might get well without it.

And the man who does not want an autopsy—not only the centers of courage need stimulation, but too often the entire medical storehouse needs refitting. Something best known to the physician himself, we trust, is lacking in the one who treats an obscure case for a day, six days, six weeks, and then does not want an autopsy. If true to himself, true to the demands of his profession, courage will not fail him. In our mental and physical round-up, we must see to it that courage is given a new backbone from time to time.

But, fellow members of the Association, not alone as members of this organization may we indulge in self-congratulation, but as members of a profession whose limitation knows no bounds, we may join in felicitation. Neither language, nor creed, nor country fetters our profession's munificent sway. The thoughts of Ehrlich, in Frankfurt; of our own Welch or Councilman, of Kitasato, in Japan, are correlated. The knife of Mayo in America, of Robson in London, of Kocher in Berne contributes to the relief of suffering in far Cathay. The founts of Lister's genius and Pasteur's divine inspiration bring countless blessings to England, to India, to France and to Africa. What a stimulus it is to realize that, howsoever small the contribution of the humblest of us may be, its impulse will be felt in climes near and far and ages present and remote! What awe cannot but overtake us when we consider each heart throb we study entwines us to Harvey of two centuries ago; with every percussion tone reverberates the sound of Laennec's voice of a century; with each vaccine inoculation, the simple observation and reasoning of Jenner to stimulate our question and deductions!

We rejoice together and cherish our history, by the warp and woof of which we are woven to the post. What heritage for us and our children! Dead must be the soul that wearies of communion with the spirits of the past; deep must be its slumber on which falls the thought of centuries; lethargic its activities that are aroused not by the deeds of heroic men! "Honor and fortune exist to him who always recognizes the neighborhood of the great, always feels himself in the presence of high causes." We worship together our science, devotion to which brings forth character, smothers egotism, levels pretension, drives our solitude, develops such loftiness of thought which can see that "against all appearances the nature of things works for truth and right forever." Of our art, let us see to it that when the final summons comes it can be said of us, "Greater love hath no man than this, that a man lay down his life for his friends."

THE ASSOCIATION OF SURGICAL LESIONS IN THE UPPER ABDOMEN.[1][2]

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THE history of medical advance from the empirical treatment of symptoms to scientific expectancy, has been based on the study of death and modern research work. The spirit has been fine, although somewhat pessimistic. The great advances have been along the line of preventive medicine and in the elucidation of problems connected with the etiology of disease.

Surgical progress has been, to a certain extent, through similar channels; the spirit, however, has been one of magnificent optimism. The great advances in surgery have come from the clinical side, modern technic having enabled examination of primary conditions during life.

As a groundwork for the study of medicine the pathological laboratory and autopsy room offer unrivaled advantage, but they teach end results only. Who of us has not admired the precision with which a trained observer makes a diagnosis? A few days later one visits

[1] Oration on Surgery at the Fifty-fifth Annual Session of the American Medical Association, at Atlantic City, June 7 to 10, 1904.
[2] Courtesy of the Journal of the American Medical Association.

the autopsy room and here observes that this almost clairvoyant analysis was correct. At the same time, we must also acknowledge that the patient has not profited; it means a hundred pages of pathology and two meager lines of treatment. How many times do we notice in the autopsy revelation that the original lesion has been but slight, and at one stage easily curable, the pathology present largely the result of secondary complications and terminal infections.

The post mortem has been an institution for years, yet what did we know about appendicitis until surgery led the way, or about gall-stone disease, supposed to be an "innocent post-mortem finding," until operation opened up the field? Did knowledge of extrauterine gestation come from the autopsy? By no means. It was through the surgeon's knife, and why? Because secondary conditions so often mask the original lesion at the post mortem. On the contrary, our understanding of acute conditions causing sudden death has been brought about by dead-house investigations; for instance, fatal hemorrhage and perforation placed acute gastric ulcer on a sound foundation. Not so chronic gastric and duodenal ulcers with late death from complications, cholangitis from gall-stone disease, and chronic pancreatitis from the same cause. These conditions could not be correctly studied, excepting after death from accidental cause, and real progress lay dormant until surgery invaded the field.

From research work we have profited much; we are gaining rapidly by this means day by day; but we can not compare the animal to the man, nor can we always artificially create similar conditions. Like the post mortem, it has its limitations, yet these two fundamental methods have enabled us to advance. Without them we would still be in the middle ages. Now the time has arrived, in the light of these investigations, to view conditions from a new standpoint at a time when the lesion is in its infancy long before the post mortem, while the patent may be benefited and the research work applied to the elucidation of living problems.

The medical man must haunt the operating theater as he has haunted the autopsy room and the laboratory. The times have changed; we must have more treatment and less pathology. It is here that surgery wins its triumphs. We must not forget, however, that to physicians of pathologic training we owe the knowledge which enables us to approach the subject. Courvoisier was the real father of gall-stone surgery. It was Balzer, Fitz, Opie and others who cleared up the pathology of pancreatitis, and surgery followed their lead. It is in the union of the internist and surgeon that progress is most rapidly made, and in the readjustment of science the former will be the architect and the latter the master builder.

Once more the physician and surgeon will come together, and the mistakes of endeavor in new fields will receive timely correction at the hands of the pathologist and experimental worker.

The surgical borderland of to-day lies in the upper region of the abdomen, a locality until recently considered almost purely medical. What are the reasons for this invasion, and have the results justified the attempt?

Surgery must be judged on three grounds: First, the mortality of the operation itself and the question whether this is greater than under the expectant plan; second, the permanence of cure contrasted with medical treatment; third, the question of disability, either introduced by the operation itself or the natural length of time which the healing process involves. On each one of these considerations we must answer yes, and we can go still farther and say that earlier operation would reduce the mortality and increase the permanence of cure and lessen the disability.

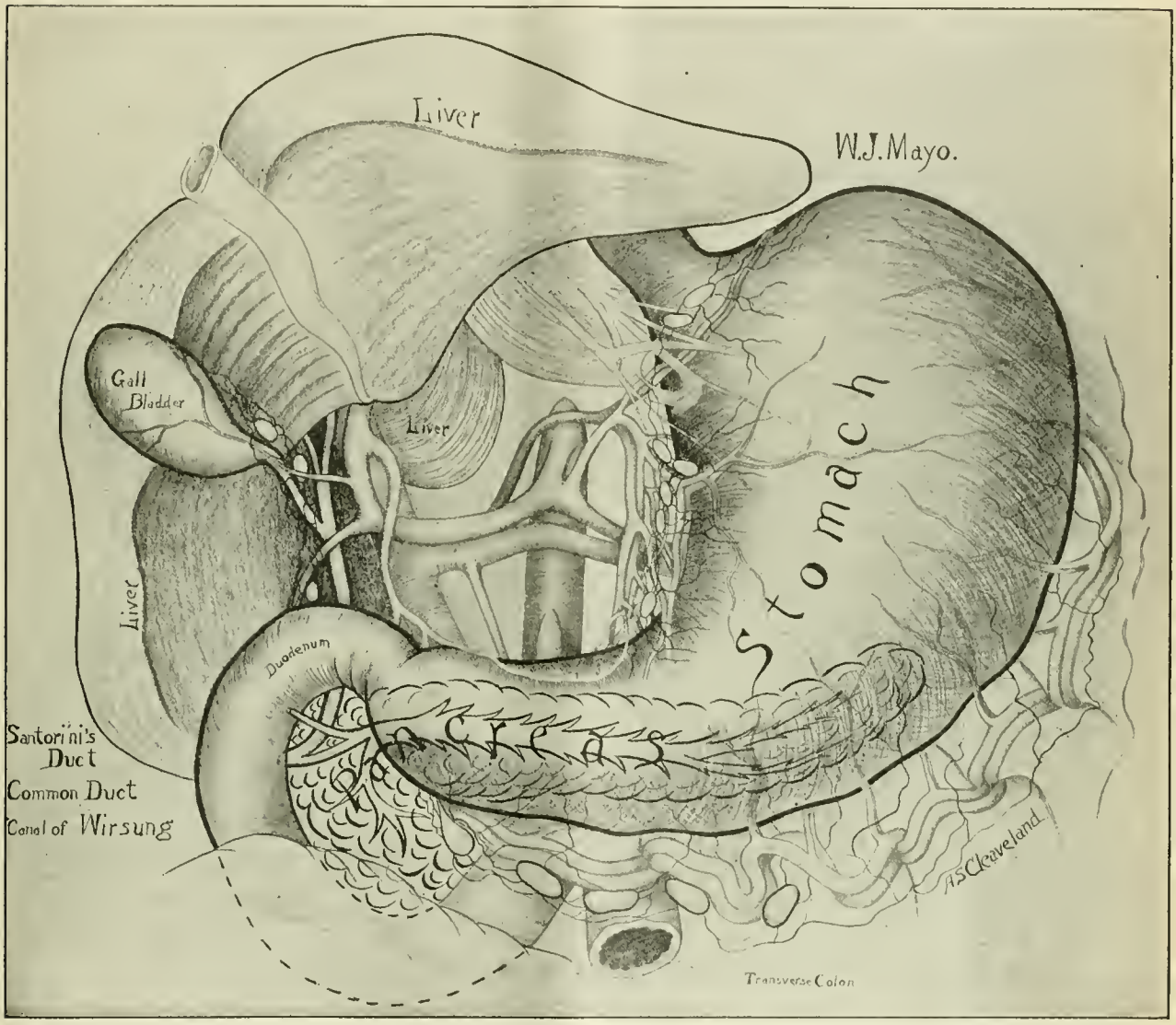
Certain parts of the body are so closely related in their anatomy, function and pathology as to be almost necessarily considered as part of the same system. The generative organs of women form so distinct a field of work as to have built up a specialty. Can we separate diseases of the kidney from the ureter, bladder and urethra? By no means. Each may stand in an etiologic relationship to the others which can not be ignored.

In the upper abdomen we have attempted to study the stomach independent of the associated organs, the liver and bile passages, the duodenum and pancreas. The result has been a confusion in diagnosis and treatment. The palm of a hand may cover a serious lesion of any one of these organs, and that, too, at the point of greatest liability; not only so, but any one of this group may start a pathological process which may extend to any one of the others, and with fully as great frequency as occurs under similar conditions in either the generative or urinary systems.

Note the disturbance of the stomach which occurs with gall-stone disease; the adhesions to the duodenum and the pancreatitis, an association direct as it is vital. Again, let me call attention to chronic ulcer of the stomach with adhesions to the pancreas, secondary ulcer of the duodenum adherent to the bile passages or gall-bladder. These are not fanciful pictures, but drawn from every-day work. I have no hesitation in saying that with an operative experience of over 1,400 cases of this description, mistakes in exact diagnosis are still common, and in many instances unavoidable. The history may be the only valuable diagnostic resource when the patient comes to us, and we all know how unreliable that may be. Given a history of painful attacks which have been very severe, but which have completely ceased, with tenderness on deep palpation in the epigastrium, and we may have disease of any one of these four organs, and not infrequently an association either direct or indirect of the pathologic process. If we clearly understand the possibilities of error, we are better prepared to meet complications or execute a change of front and operate on one organ when another procedure was planned. In the majority of cases a pathological diagnosis is possible, and one can say with certainty, "This is gall-stone disease," or "This is ulcer of the stomach"; but in a considerable minority a surgical diagnosis is the best that can be made. That is, we can say: "In this locality is a diseased process which requires operative treatment, the exact nature of which must be determined by incision." The patient does not come to us for the purpose of having a certain operation performed, but seeks relief from suffering and disability.

Let me call your attention for a few minutes to the anatomic diagram, showing the nearly vertical position of the stomach with the pylorus in the middle line of the body, and but little elevated above the lowest point of the gastric cavity. It is turned upward and to the right just enough to prevent the weight of the gastric contents bearing directly on the sphincter apparatus. The only portion of the duodenum in which we are interested is the four inches lying between the pylorus and the papilla of the common duct of the liver and pancreas. This may be called the vestibule of the small intestines. Its position subjects it internally to the perils of ulcer from the acid gastric juices which its thin

tunics but inadequately resist. Externally its function is often interfered with by adhesions to the gall-bladder and bile tract, secondary to gall-stone disease. This unoffending bit of intestine is so often offended against as to cause it to become the most frequently diseased portion of bowel of the same length. The remaining eight inches of the duodenum is protected by the alkaline secretions of the pancreas and liver. Its fixed position and peculiar horseshoe shape, with its delivery point nearly as high as its origin, enable it to mechanically slow the



ingested material during the mixing process for which its large caliber affords accommodation.

The anatomy of the bile tract is equally interesting, and especially the relations of the common liver duct to the pancreatic duct and the duodenum. There is continuity of mucous surface, each protecting itself from the secretions of the others by the mechanical washing effects of its own secretion, the joint discharge and a feeble sphincter apparatus preventing entrance of the duodenal contents.

The gall-bladder, as it furnished the initial lesion in more than one-half of the diseases of this group, is of great interest. Like the appendix, an obsolete organ of storage function and limited outlet, it gives rise to a variety of troubles, which we are only of late beginning to appreciate. It is an old aphorism that "Nature finds mischief for idle hands to do." The gall-bladder has a capacity of about an ounce, and as we find almost universally in organs of storage function, the neck is raised slightly above the lowest point to prevent the weight of contents resting directly against the outlet. The little pouch thus formed may be called the pelvis of the gall-bladder (Brewer). It is here that the obstructing stone is so frequently lodged in cystic impactions. Murphy observes that the fundus of all organs has but few lymphatics, while the region of the neck has an abundant supply; hence, even with septic contents, there is but a mild reaction when the pelvis is obstructed, as compared with the startling temperature curves of duct stones.

The pancreas composed of two originally separated parts, has in nearly half of the specimens which have been examined two patent ducts, that of Wirsung, which is the important one, uniting with the

common liver duct. The minor duct of Santorini, however, has a possibility of useful function in certain diseased processes, as pointed out by Opie. The pancreas was originally an intraperitoneal organ, becoming retroperitoneal by a later evolution (Huntington), and in this anatomic peculiarity Brewer believes lies one of the reasons for the diffusion of fat necrosis resulting from acute pancreatitis. Mikulicz has called attention to the fact that adhesions to the pancreas in gastric cancer gave a mortality of 73 per cent. in his resection cases. Robson also notes the pancreatic mischief occasioned by perforating gastric ulcer on the posterior wall.

The blood supply of this group of organs is almost entirely from a single source in the celiac axis. It has been experimentally developed that the severance of all connctions of the pancreas excepting its blood supply, does not check secretion if food is placed in the gastrointestinal tract. In the nerve supply from the pneumogastrics and sympathetic ganglion, we find the same direct relationship involved. If we study the function we see the same association. The stomach can be compared to a mill, the fundus the hopper, in which the food is macerated in a weak solution of pepsin and hydrochloric acid, and the muscular pyloric portion the grindstones in which the masses are broken up into a homogeneous whole. The entrance of food into the duodenum causes the outflow of biliary and pancreatic secretions, the absorption returning to the liver by way of the portal vein. This is so elementary that you wonder that I should refer to it, yet the causation of the common surgical lesions lies in perversion of these fundamental functions, and is just as simple. Mechanical injury of the pyloric portion and excessive acidity of the gastric secretions, under anemic conditions, give rise to ulcer and lie behind the precancerous lesions which Ochsner notes is found in the history of cancer of the stomach in the majority of cases. The acidity of the gastric secretions renders the contents of the stomach, when turned into the intestine, relatively sterile, but increases the liability of ulcer of the duodenum. The sterility of the upper intestinal tract is still further increased by intestinal absorption, as shown by Adami, the bacteria being picked up and destroyed in part by the glands. Many germs are, however, carried to the liver, and here either annihilated or screened out of the blood in the portal vein and discharged with the bile. We must look on the bile as always containing a few bacteria, and it is probably this attenuated infection of bile retained in the gall-bladder which gives rise to gall-stone disease, which in turn is the chief factor in the production of duct inflammation of both the liver and pancreas.

These considerations, so briefly outlined, taken in conjunction with the embryologic origin, justify the grouping of *the surgical lesions of the upper digestive tract*, and at once enable the diagnostician to associate the symptoms and the surgeon to direct his attention, not to one, but to the entire group of organs. The burden of proof lies with the practitioner, not only to demonstrate that the disease rests in one organ, but to differentiate and show that no other is involved.

The art of the diagnostician lies in the proper valuation of the signs and symptoms of disease in organs of associated function and pathology. The instinct which seems to lead some men to a correct conclusion, and by a mental process they could not themselves analyze, usually depends on few things, the immaterial or inconclusive evidence being unconsciously discarded. For instance, note the value of the colic in the diagnosis of gall-stones. The typical attack comes on and stops abruptly, is relieved by vomiting or a feeling of movement of gas, is irregular in time, in regard to food, and not accompanied by temperature or pulse elevation, and leaves the patient able to attend her duties almost immediately after cessation of pain. While the pain lasts, it is excruciating, felt in its greatest intensity in the epigastrium, radiating upward behind the sternum and into the back. The distress penetrates to the right side, but occasionally to the left, and lasts from a few minutes to six or eight hours. When the patient comes to the physician it may have been years since the typical attacks; he may have forgotten them, the present trouble complained of being pain, digestive disturbance, and tenderness on deep pressure over the gall-bladder region. The history of the early attack is worth more than the physical examination in many cases. Compare it with the pain in gastric or duodenal ulcer, which may be just as severe, but lasts a day or two longer, especially when due to regional peritonitis, and is accompanied by gastric symptoms and local tenderness. The patient diets, which means he reduces his food supply. The symptoms last more or less for some days or weeks, and the interval of apparent cure gives some weeks or months of comparative health.

Acute perforations of the organs of this group are relatively common and give rise to symptoms which would be at once recognized if they occurred in the region of the appendix, but occurring in the upper abdomen too often go to a fatal issue unoperated. The initial symptoms are remarkably alike, whether of the gall-bladder, the duodenum, stomach or acute perforation of the pancreas with fat necrosis. The onset is essentially the same in each. Sudden extreme epigastric pain, with collapse, ushers in the attack, and muscular rigidity, as a rule, comes on early. The diagnosis of perforation, if we are on our guard, is easy, although it may be difficult to say which organ is affected; but this does not make any difference. The vital consideration is that it has happened, and immediate operation must be performed.

In 811 operations on the gall-bladder and bile tract we had 4 acute perforations of the gall-bladder, with but one recovery, although the average mortality in the benign series was but 4.47 per cent. In 45 operations for duodenal ulcer, 4 acute perforations occurred, with 2 recoveries, while in the 41 operations for subacute and chronic ulcer there was only one death. In 469 operations on the stomach, 5 perforations occurred, with 2 deaths. In 32 operations for diseases of the pancreas, there was only one operation for acute pancreatitis and fat necrosis, with recovery. This gives 14 cases of acute perforation, with a mortality of 50 per cent., and why? Because the operation was usually too late. The death rate in over 1,150 operations for subacute and chronic benign conditions of this group of organs averaged a little less than 5 per cent., counting as a death from operation any patient dying in the hospital without regard to cause or time elapsed between the operation and the fatal issue. If we add to this mortality of 50 per cent. in operations for acute perforation, the cases seen in a moribund condition beyond even attempt at relief, and the still larger number in which death occurs without an ante-mortem diagnosis, we get some idea of the appalling nature of the disaster. To be successful, operation must be immediate; the condition is as

imperative as hemorrhage from an artery of the third class. Few recover operated on later than ten hours after perforation. The conditions simulating perforation in the upper abdomen, such as thrombosis of the mesenteric or splenic vessels, diaphragmatic and duodenal hernia with strangulation, and so forth, are rare, and likewise call for early operation.

As a rule the history and location of the early acute pain will furnish evidence as to the origin of the trouble. Preceding perforation of the gall-bladder there are often symptoms of several days' duration with a history of gall-stones. The acute pain occurs in the gall-bladder region. Early drainage with removal of the gall-bladder should give a mortality of not to exceed 10 per cent.

Duodenal perforation usually occurs in cases of chronic ulcer with years of symptoms preceding; but the immediate onset is exceedingly acute, and not ushered in by a few days or hours of prodromata, as is often the case with the gall-bladder. The location of the early pain is just to the right of the median line. The liquids gravitate at once to the appendiceal region and simulate perforated appendix. The rapid diffusion of escaping contents is fatal to delay. Operation for acute perforation of the duodenum is rarely successful after eight hours. Suture of the perforation with suprapubic pelvic drainage, and after-treatment in the sitting posture (exaggerated Fowler's) in early cases should give 80 per cent. or more of recoveries.

Gastric perforations occur on the anterior wall, according to Brunner, 7 times to 1 posterior, and near the cardiac end 5 times to 3 times in the pyloric portion, and near the lesser curvature 122 times to 16 times near the greater curvature. The initial pain is usually to the left of the median line, and early diffusion of fluids is to be expected. Only 10 per cent. occur without previous symptoms of chronic ulcer. The results of operation being in direct ratio to the amount of gastric contents, and the length of time which has elapsed, the treatment is similar to the duodenal ulcer.

The term perforation of the pancreas from inflammation with resulting fat necrosis is a purely pictorial expression, and not a pathologic entity in the sense the word is used in the preceding remarks, yet it conveys the ideal and calls attention to the value of peritoneal drainage in its treatment, as shown by Woolsey. The symptoms are sudden pain in the epigastrium, collapse and early extreme distention of the abdomen. On opening the peritoneal cavity, free fluid often of a hemorrhagic character is evacuated. The little fatty masses in every direction and the enlarged pancreas call attention to the source of the trouble. This particular phase of acute pancreatitis cannot be separated from the hemorrhagic type in which treatment is as yet in an unsettled state. Those interested in this question will find a mine of information in the Hunterian lectures for 1904 by Mayo Robson.

The group of acute perforations gives an unsatisfactory mortality, with a prolonged period of disability from drainage, and without a certainty of permanent cure of previous underlying conditions. This will not long continue. Like acute gangrenous appendicitis, the condition will be recognized early with corresponding improvement in results.

The diagnosis of the chronic infective lesions of the organs of this group is in a far more satisfactory condition. The general mortality of gall-stone operations is not above 5 per cent., taking the cases as they come, but even this is too high. Grouping the cases in which the entire process is limited to the gall-bladder, the mortality is from 1 to 2 per cent., and depends to a large extent on the general condition of the patient. Secondary complications, chiefly those which involve the hepatic and common ducts with resultant cholangitis, pancreatitis, and so forth, are responsible for the death rate. As practically all of the patients have symptoms on which a diagnosis could be based previous to the complications, it will not be long before early operation in patients otherwise in good health will be the rule as it is now in chronic and relapsing appendicitis. Not only is the mortality thereby reduced, but the disability is likewise lessened. The average stay in the hospital for uncomplicated gall-stone patients is slightly less than seventeen days; the convalescence of the complicated duct cases is prolonged one or two weeks.

Chronic infections of the pancreas are usually secondary to gall-stone disease, and, as a rule, do not occur excepting where the common duct has been directly irritated by the presence of calculi, although the consequences may continue for some time after the passage of the offending body. The results of drainage of the gall-bladder and bile ducts are extremely satisfactory. In our series of 32 cases there were but 2 deaths; these patients had coincident suppurative cholangitis.

Chronic infective lesions of the stomach with ulcer as a type are becoming better understood every day, as surgical operation discloses the actual conditions present. The primary mortality of operations for their relief are in a fairly satisfactory condition, but as to ultimate results we can not say definitely. For the obstructive complications the result of ulcer, there can be no question as to the relief afforded and at a nominal risk. The dilated stomach with retention or stagnation of food suggests at once drainage operations with gastrojejunostomy as the type. We have patients of this description alive and well more than twelve years after operation.

Chronic ulcer without mechanical obstruction gives a less promising outlook. The very fact that there is normal gastric motility indicates that gastroenterostomy or other drainage operation is less necessary. Our results in operations for this description of lesion have not been wholly satisfactory, and furnish a considerable percentage of secondary operations and failures to relieve.

Cannon's experiments have shown the same results. A gastroenterostomy on a normal stomach of an animal does not drain the gastric cavity, even if placed at the lowest point. The gravity advantage of the gastroenterostomy is overcome by intra-abdominal tension, and the food, by muscular action, is carried out the pylorus rather than the artificial opening. The magnificent showing of gastroenterostomy in obstruction has led to the indiscriminate performance of the operation in those cases of ulcer in which gastric drainage is normal. This particular phase of the subject must be further investigated.

Chronic ulcer of the duodenum is relatively more common in the upper two inches than in any corresponding portion of the stomach. It is especially liable to perforate, although its sheltered situation usually leads to adhesive protection. Many pyloric ulcers will be found to have their origin on the duodenal side. Gastroenterostomy is the operation of choice as it diverts the irritating gastric juices and food products from the sensitive surface, thus promoting rapid healing. We have performed gastrojejunostomy 286 times for all purposes, with a mor-

tality of 5½ per cent. in the benign series. The recent improvements in the technic of gastroenterostomy has greatly reduced the mortality and largely eliminated the causes of failure to mechanically relieve the conditions. Moynihan well says that "the surgeon may not unreasonably expect that from being a last resource gastroenterostomy may be considered as a method of treatment worthy of consideration in a much earlier stage of chronic ulcer of the stomach." Excision of gastric and duodenal ulcers would seem to be a wise procedure, but is open to certain strong objections. In 20 per cent. of cases more than one ulcer is present, and one or more may be undetected or lie in an inaccessible situation. It leaves the ulcer tendency unrelieved and more ulcers may form. Rodman has suggested the removal of the pyloric or ulcer-bearing portion of the stomach with complete closure of both duodenal and stomach ends and independent gastrojejunostomy. We have followed this plan in 5 cases of inveterate ulcer relapsing after gastroenterostomy, with good results. The gastroduodenostomy of Finney is a most excellent operation, and we would predict a wider field of usefulness than it has enjoyed. We have performed this operation 46 times, with one death, and no relapse. The theoretical objection is that in open ulcer the food must pass the ulcerated area before reaching the widened pylorus, and obstruction has no part in the production of ulcer, as is shown by the development of duodenal ulcers. Pyloroplasty must be discarded. While we had no death in 20 operations, we had 7 relapses.

In briefly calling attention to the malignant diseases of this group of organs, the writer would emphasize the possibilities of cure by means of operation. In the gall-bladder we found 4 per cent. of cases at the operating table had malignant disease, and all of these cases had gall-stones present or evidence that they had been present at one time.

Since it has become the practice to remove all thick-walled gall-bladders as useless and a possible source of future trouble, many cases of malignant disease in an early stage have been in this way, as one might say, accidentally cured. We have met with several such instances.

Cancer of the stomach is the most common type of malignant disease in the human body, constituting one-fourth to one-third of the total number. The radical treatment of gastric carcinoma is now on assured ground, with a mortality of 10 per cent., or less in favorable cases, to 20 per cent. in late but still operable disease. The only necessary thing for success is an early diagnosis, and this must be on clinical grounds, supplemented by early exploratory incision. In 46 gastric resections for pyloric cancer we had 7 deaths.

The profession may well look on the surgical achievements in this new field of work with pardonable pride. That there are many shortcomings must be admitted, but in the history of surgery there has never been a territory opened up with equal rapidity, nor one in which the physician and surgeon have worked together in such harmony for the common good. The statistics on which this paper is based represent the operative experience of Dr. Charles H. Mayo and myself.

Tent for Consumptives.—The Central Church, of Chicago, has devoted the collection of one Sunday to the providing of one home tent for consumptives at Whitehead, Col.

PROGNOSIS: ITS THEORY AND PRACTICE.[1] [2]

BY GEORGE DOCK, M.D.,

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The topic I have ventured to bring before you is "Prognosis: Its Theory and Practice." As a text, let me quote from the oldest work we have on this subject,[3] which, though old, still has the freshness and modernism that genius gives to human productions:

"It appears to me [said the Father of Medicine] a most excellent thing for the physician to cultivate prognosis; for by foreseeing and foretelling, in the presence of the sick, the present, the past and the future, and explaining the omissions which patients have been guilty of, he will be the more readily believed to be acquainted with the circumstances of the sick; so that men will have confidence to entrust themselves to such a physician. And he will manage the cure best who has foreseen what is to happen from the present state of matters. For it is impossible to make all the sick well. This indeed would have been better than to be able to foretell what is going to happen; but since men die, some even before calling the physician, from the violence of the disease, and some die immediately after calling him, having lived perhaps only one day or a little longer, and before the physician could bring his art to counteract the disease; it therefore becomes necessary to know the nature of such affections, how far they are above the powers of the constitution. Thus a man will be the more esteemed to be a good physician, for he will be the better able to treat those aright who can be saved, from having long anticipated everything, and by seeing and announcing beforehand those who will live and those who will die, he will thus escape censure."

In this Hippocrates describes the essential importance of prognosis to the patient and the physician in relation to treatment. Besides this, prognosis is often important to relatives and dependents, not merely for reasons of sentiment, but in order to protect property and prevent unhappiness and destitution that would be as painful for the patient to contemplate as for the others to suffer. There is another aspect not present in the time of Hippocrates—giving the patient an opportunity to prepare himself for the anticipated life beyond the grave. In many cases, too, prognosis may have important bearings on political parties or for the commonwealth.

The patient very often ignores these needs. If he asks for anything, it is usually either the name of the disease or that of the medicine the physician intends to use. He really understands as little of the significance of the name as he does of the action of the drug, and is often more quickly satisfied in proportion as both answers are occult. What really should interest him is, as clearly as his mental development permits, some idea of the changes in his body, anatomic and functional, their present seriousness, the chances of death, or of complete or partial recovery, with, in the latter case, the probability or temporary or permanent disability, near or remote, in some organs or functions.

Within the last century prognosis has lost some of its relative importance. Unlike etiology, diagnosis, prophylaxis and treatment, it has no special literature, and is only occasionally the subject of addresses or essays. But much of the so-called prognosis of the earlier periods was really diagnosis, as in Hippocrates' vivid description of empyema, and his remarks in regard to other diseases of the respiratory organs. It also seems

[1] Abstract of Oration in Medicine at the Fifty-fifth Annual Session of the American Medical Association at Atlantic City, June 7 to 10, 1904.

[2] Courtesy of the Journal of the American Medical Association.

[3] The Book of Prognostics; the genuine works of Hippocrates, Adams' translation, Vol. I.

a mistake to assume that practical prognosis was more accurate at any period than in later ages of equal enlightenment. While we may admit that great masters, like Hippocrates himself, Galen, Sydenham and Boerhaave, were remarkably accurate in their prognostications, there is no reason for thinking that the rank and file, following their rules without having their keenness of observation and precision of reasoning, were more accurate, or as accurate as physicians of a later period when the formal study of prognosis was neglected, but when other means of knowledge were greater than before. We must bear in mind a fundamental difference in methods. The older prognosis was based on the observation of symptoms alone, and consciously or unconsciously took the standpoint of humoral pathology or some equally imperfect theory. One charge against ancient prognosis is not as serious as some have thought, viz., that the prognosis was made without a definite diagnosis. Even now we sometimes have to be satisfied with a very imperfect diagnosis, and yet may make a very good prognosis, at least for the immediate future. But the older prognosis was almost wholly lacking in anatomic, and totally without chemical basis. Realizing how far short of accuracy the diagnosis must have been in many cases, we can understand that prognosis must have failed almost as often. Moreover, in early medicine, most attention was paid to acute diseases, or the acute terminations of chronic diseases, so that the many important chronic diseases that now make so much of medical practice were comparatively neglected.

Whatever shortcomings medicine may have—and those who cultivate the subject most thoroughly feel them most deeply—it must be admitted that diagnosis is much more certain than ever before. Not only are we able to distinguish more quickly and more accurately many diseases long known, such as some of the acute fevers, malarial disease, tuberculosis, diphtheria and pneumonia; but we have learned the existence and the means of detecting many diseases formerly confused with others. As examples, let me name only a few, such as the diseases originating in the vermiform appendix and the gall-bladder, diseases of the pancreas, many diseases of the blood, a large number of diseases of the nervous system and of the ductless glands, and many diseases caused by animal parasites, of which the sleeping sickness is the most striking example at present.

The older prognosis, far from being negligible, is really of fundamental importance. It gives the accumulated experience of ages that, untrammeled by detail, carefully noted broad and elementary features of disease. As gathered together in the aphorisms and prognostics of Hippocrates, and in the numerous commentaries on them—not always improving the original—it furnishes a fund of inestimable value, but like everything else in medical art, this knowledge is less useful when applied mechanically than when worked over in the crucible of personal experience, tested by other methods and transposed into current formulæ.

Older prognosis was possible to collect into fairly circumscribed space, but this is no longer true. In proportion as diagnosis has become subdivided, specialized and enlarged, and as knowledge of morbid processes has become more complex, so prognosis has become more intricate. Older prognosis was based on broad symptomatic lines, qualified in practice, we may be sure, by a consideration of the patient's constitution. The present basis is diagnosis, but of a different kind. It means not merely a recognition of the name of the disease, but a knowledge of the nature of the disease, still incomplete, but rapidly gaining in fullness and accuracy. In many cases we know the causes, and a good deal of the nature of the causes; in many more we know the seats of the disease, and the anatomic, chemical and functional changes that result directly and indirectly. It is by the study of the altered functions that we can make a prognosis and plan useful treatment without knowing the name of the disease. Clinical and anatomical investigations have been aided by experiments and observations on lower animals, without which our knowledge would have been much less certain than it is. Scores of technical methods have been devised for reactions and explorations; natural forces previously unknown, such as the X-rays, have quickly been pressed into service. Long and painstaking observations have thrown much light on complications and sequels, their nature and detection. From all these things the prognosis proceeds naturally in most cases, but here again an indispensable part is a just recognition of the patient's constitution. It is probably true that in this connection we unduly neglect some prognostic aids furnished by the patient, such as changes of the physiognomy. But, on the other hand, we have much more accurate methods of ascertaining the constitutional factor than were formerly available. Constitution is still a somewhat vague term, but we can speak of it here as the result of the functions of all the organs. While the method of representing these functions is still inadequate, we can safely assert that we have much more accurate means of determining the condition of the heart, arteries and veins, and the force of the circulation than we had before; we have gone considerably beyond the recognition of the apoplectic habit in foretelling the danger of vascular disease. We can usually estimate fairly well the efficiency of the blood-forming organs; we can determine with reasonable accuracy the capacity for work of the stomach and intestines, as well as a few details of nutrition and metabolism; we are rapidly getting beyond the limitations of Falstaff's water doctor in fixing the anatomic and functional ability of the kidneys, and we are working toward methods of testing the functions of liver, muscles and nerves. When we have all these factors thoroughly investigated it is probable there will be little need of the *vis medicatrix naturæ*, now an essential part of prognosis.

In the conclusion resulting from these things there is no room for a supposititious clairvoyance, an intangible gift of prophecy, a hypothetic intuition that trained intelligence can not equal or industry surpass. We have a positive knowledge, a prescience, a prognosis, corresponding in accuracy and usefulness to our diagnosis, and often in advance of our treatment.

In the foregoing I have spoken of the theory. In the practical use of prognosis the first to profit by that function is the physician. With an accurate prognosis, based on exact and thorough examinations, knowledge of the natural course of the disease and of the patient, the physician foresees the course of the malady and is prepared for changes, emergencies and complications. He is thus enabled not only to preserve his imperturbability, so essential in carrying out necessary measures of treatment, but he can also prepare the patient to meet coming events in better physical and mental condition than otherwise, and, what is often of even greater importance, the self-confidence thus shown stimulates the efforts and the compliance of others concerned in the case.

Physicians, like other people, can often be classified as either optimists or pessimists. Not that these tendencies affect all parts of the individual's activities. One may be a perfect Pangloss in sociologic, political or climatic matters, and yet take a gloomy view of all his patients. (I am not speaking of those who, rarer in the profession than in some of its parasitic growths, habitually exaggerate the danger of their cases, making every angina a diphtheria, every erythema an erysipelas and

every bronchitis a threatened pneumonia.) Another who is perpetually cast down by the failure of democratic government or the need of a stronger one, the immorality of the rich and the rule of the bosses, may meet every case with hope and cheer.

But the practice of prognosis should be cultivated as objectively as any other part of medicine. Not only the therapeutic indications suggested by it, but also the human ones, should be carried out without fear or timidity, without unnecessary harshness, but also without the false benevolence that often does more harm than brutal frankness or ignorance. Here, as in other departments of medicine, the welfare of the patient must be the touchstone by which the action proposed should be proved.

No disease should be looked on as insignificant. Nothing seems less becoming than to hear medical men speaking lightly of disease in general, or of any disease in particular. It is no consolation to the mother whose child has died of one of the rare complications of chicken-pox to find that many physicians think that too trivial to concern themselves with it. Nor does it increase confidence in the profession to have hysteria and neurasthenia considered imaginary and ridiculous evidences of perversity, while the impatience, not to say lack of scientific interest sometimes shown toward other less well-defined neuroses, undoubtedly has some relation with the crowded ranks of followers of isms of all kinds.

In acute diseases the best general rule is still that of Hippocrates (Prognostics; 19, Sect. II): "In acute disease it is not quite safe to prognosticate either death or recovery." A case of this kind, however, should not be considered likely to die unless from a complication, or from the effect of a pre-existing disease, though in certain diseases, such as scarlet fever and diphtheria, the danger of a sudden change and of death should be made known in the beginning. Of course, in cholera and plague, and even in cholera infantum, such information is rarely necessary. In some other acute diseases the study of prognosis prepares the physician not to be unduly elated by the remissions that are so reassuring to relatives. The temporary amelioration in meningitis and peritonitis, in which the patient seems almost free from symptoms, may be mentioned. Less disappointing, but still ominous, is the occasional lull in bronchopneumonia. But in the cases I have just mentioned it is rarely advisable to bring the unfavorable probabilities too strongly before the patient. In these we often need the effects of reassurance and of hope. For the latter as we see it in medical practice is not merely the "kind nurse of old age—hope—which," as Pindar says, "more than aught else steers the capricious will of mortal man," in acute cases especially it is distinctly stimulating to physical and mental processes. Sir Dyce Duckworth, speaking from a ripe experience, recently gave an address on "Hopefulness in Medicine," in which he emphasized this fact, and Niemeyer, equally successful in his career, at his medical promotion defended among others the thesis *medicus semper hilaris*. On the other hand, it is a serious error not to point out, after recovery from certain acute diseases, the possibility of sequels, sometimes months or years afterward, and the advantage of examinations at intervals for the purpose of detecting them before they become inveterate. The thorough examination of the urine at intervals after scarlet fever, of the lungs after pleurisy and all bronchitic diseases, of the heart and arteries after many infectious diseases, often has great practical value.

In chronic diseases there are few exceptions to the rule that the patient should be told the nature of his case as fully as possible. At least, in patients who can be made to understand, and who have a possibility of recovery, of definite improvement or of long duration, there are only individual exceptions. Patients with tuberculosis, heart disease, kidney disease, and disease of the alimentary tract can not get the best possible results unless they understand why and how they should do certain things and why they should avoid others. Tact and patience and a knowledge of human nature are essential in this. The statements made should be as simple as possible, as brief as definiteness permits, without pathological explanations. Better no statement than an unconsidered or an unintelligible one.

In talks of this kind we too often forget how different are the ideas of non-medical persons, even those who have studied physiology in the public schools, from our own, regarding the body, its functions and diseases. I am always interested in seeing how soon medical students lose the lay point of view, just as one forgets an unused foreign language, and how sometimes they never recover it. Yet unless they do, they lack valuable means of giving aid. Darwin has noticed how everyone who studies profoundly a subject often becomes unaware on what points the ignorant require information. Carlyle, as John Beattie Crozier tells us, imagined his stomach as some old teakettle, thickly encrusted with fur, and I have seen an otherwise intelligent man on the point of using strong sulphuric acid for a cough, because he found by experiment that oil of vitrol dissolved sputum more quickly than any other reagent he had tried. Nor is it enough to make the explanation. We must ascertain whether the statements are understood, and, if possible, whether they are accepted. How often, even with an intelligent individual, after we have stated the existence of a small tuberculous focus, and described the results of rational treatment, we find the patient shutting himself in a dark and close room, taking "lung cures," cough syrups and more or less medicated cod-liver oil, and how often, after demonstrating the sufficiency of dietetic treatment in a digestive disease, we find the patient taking bitters, digestive ferments, usually well neutralized by alcohol, antiseptics and other drugs less easy to classify. So time and patience must be devoted to this part of the work, and we should never be discouraged by failure. I am convinced that there is an improvement in the possibility of carrying out rational treatment, notwithstanding the insidious propaganda of useless or dangerous methods in and out of medical journals.

It is much easier to advise in cases that have a strong tendency to recovery than in those that have not, and there is room for difference of opinion and of practice in the latter, because the conditions vary with patients according to individuality and accidental factors. A number of aspects present themselves for consideration. In the first place, there is often an element of diagnostic or prognostic uncertainty, where the prospects are better than they seem. Sir Dyce Duckworth[1] has formulated universal experience in pointing out the advantages of the "cautious 'if,'" and if the alternative accepted is the hopeful one, much good can be accomplished in many cases. An interesting example is given by Kussmaul in his fascinating "Jugenderinnerungen." Having made a reputation as a zealous dissector, and having won over his confiding peasants to the many advantages of post-mortem examinations, he was asked by the father of a girl with advanced tuberculosis of the peritoneum to arrange for an autopsy on the daughter, when she died. Although Kussmaul, too, thought the daughter was lost, he retorted that he could not speak of an autopsy until the patient was dead. Notwith-

[1] Duckworth, Sir Dyce: Address on Medicine, British Medical Journal, 1896, II, p. 251.

standing many obstacles, the girl recovered. The tendency to take the less hopeful alternative is still shown in some cases of tuberculous disease in stages not far advanced, though it is not so common, fortunately, as it was not many years ago, to see such patients given over either to a life of dissipation or of abject despair. The prognosis of valvular disease of the heart is also in a much more optimistic vein than it was fifty or even twenty-five years ago. However, in many cases the prognosis needs to be tested by a therapeutic "if" that is not as well recognized as it deserves. The physical conditions may seem hopeless, and yet if the action of the heart can be improved the case may assume a very different aspect. The advantages of trying were well illustrated by a case in which a woman with aortic and mitral insufficiency and moderately severe loss of compensation was given up as beyond treatment by her family physician. Not knowing this I told the relatives the impossibility of complete recovery, the danger of sudden death or more probably rapid failure at any time, but also the possibility of improvement and a fairly comfortable life for some time, all the more worthy trying to realize, because the condition was not complicated by medicinal action, and the other important organs showed no serious alteration. The family physician then wrote me admitting that he had stated improvement was out of the question, and treatment not worth trying, although under subsequent treatment the patient lived two years and nine months.

In cases hopeless in a more certain degree than such as I have just mentioned, it too often happens that treatment is abandoned too early in the case. Patients with cancer of the stomach or other inoperable tumors, cirrhosis of the liver, and many other diseases are permitted to drag out their existence without relief.

There are several reasons for this. Sometimes families having been told the truth about such a patient, refuse all further medical aid, even when the conscientious physician who gives the information points out what can still be done.

Many physicians voluntarily discontinue attendance when they realize that the end is inevitable, with the feeling, doubtless, expressed by Sir William Temple. The latter said that "an honest physician is excused for leaving his patient when he finds the disease growing desperate, and can, by his attendance, expect only to receive his fees, without any hopes or appearance of deserving them." This, however, ignores the fact that in such cases the accomplished physician can often do more real good to the patient than in many cases that recover, while the opportunities for obviating despair, alleviating pain and soothing mental anguish, and for exhibiting thoughtfulness, gentleness, persistence and variety of resources, are more valuable to the physician than any fee. Even in acute cases it sometimes happens that the physician is either discharged or withdraws because the indications seem hopeless, and I have known of patients with pneumonia living for one or two days in this way, the family waiting for the end of a life that with greater effort might have been saved. Sir Francis Bacon described this tendency as one of the deficiencies of medicine, "so that Sylla and the triumvirs never proscribed so many men to die as physicians do." For, as he continued, "the office of a physician is not only to restore health, but to mitigate pain, and not only when such mitigation may conduce to recovery, but when it may serve to make a fair and easy passage."

Improvement in methods of treatment have an important relation to prognosis, in that many diseases considered hopeless at one stage of knowledge, may in another offer many chances for recovery or alleviation. In this connection a critical knowledge of current medical literature is necessary, and a realization of the value of medical evidence. Few things can be more disastrous to the physician's mental development—never completed—than constant change of therapeutic method, but there are differences. One need not try every drug proposed for the treatment of typhoid fever or pneumonia, nor every new antipyretic or hypnotic. But the physician who does not inform himself quickly of the value of surgical treatment in various disease as it is developed, in pelvic diseases, brain diseases, diseases of the appendix, biliary tract, stomach and pancreas, comes very near deserving the reputation of an unscrupulous practitioner. In these departments, too, mistakes are made and exaggerations are inevitable concomitants of progress, but the gain is often distinct and unmistakable, and often changes the prognosis from one extreme to the other.

The rule in regard to giving the patient a good prognosis and the relatives a bad one, can often be followed, but is a very fallacious one on the whole. It is often more necessary to keep up the spirits of the relatives, especially those who have to nurse, than those of the patient, so that sometimes the rule can be reversed with advantage. Darwin cites some interesting and instructive examples of this kind, from his father's practice, and Bilroth has expressed himself with much feeling in one of his letters. Moreover, the relatives informed, either from a feeling of compassion or otherwise, may not bring the patient to act on the information, and I have known of serious financial loss befalling a family because the relative entrusted with the task of breaking the news to the patient did not do this. Another risk is that the relatives may divulge the fatal prognosis in such a way as to put the physician in the light of a heartless deceiver, and thereby cause the patient to lose all confidence in him. On the whole, in cases where the patient should know the truth the physician is often the best one to state it, and he should see that this is done before it is too late.

Exceptions to the rule of candor may occur in the case of children, in women with no spiritual obligations or business responsibility, or in exceptional cases in men. No general rule can be laid down, but that such exceptions occur can be confirmed probably by every physician.

Of course, this part of the subject is closely related to the theory of ethics, and many writers on this subject have touched directly on the question of medical veracity with, as one might anticipate, diametric differences of opinion. Some moralists of the strict school of Kant and Fichte insist that any deviation from the absolute truth is wrong in medicine, as they assert that it would be wrong even for the purpose of saving the whole race. Others believe with Paulssen, who says: "There is not a physician in the world who does not give deceptive answers to his patients, who does not excite hopes that he does not share. He does not blame himself, nor do others, for everyone does the same." Johnson, "the stern old moralist," in his remarks on the subject, laid open a serious flaw in his own logic: "You have no business with consequences, you are to tell the truth." But surely the physician's chief interest is with the consequences, and if he thinks the patient can gain only by misrepresentation, it is just as proper for him to use it as it would be to give a medicine that in other cases might be quite improper. But the physician in such a dilemma would do well to bear in mind the next sentence in Johnson's *ipse dixit:* "You are not sure what effect your telling him that he is in danger may have. It may bring his distemper to a crisis, and that may cure him." Jonathan Dymond, as strict as any one in his morality, threw a gleam of stern humor into the

discussion: "Persons frequently employ falsehoods to the sick man who cannot recover, lest it should discompose his mind. This is called kindness, though an earnest preparation for death may be at stake on their speaking the truth. There is a peculiar inconsistence sometimes exhibited on such occasions. The persons who will not discompose a sick man for his interest in futurity, will discompose him without scruple if he has not made his will."

This part of the discussion might be indefinitely prolonged, but I think we can never get far away from the principle. I intimated in the beginning—that in practical prognosis we must individualize, just as we have to in therapeutics, with the patient's welfare ever the object of our activity.

Accidents that follow an unfavorable prognosis occasionally suggest a revision of methods. I have already alluded to the error formerly not uncommon in the treatment of tuberculous patients. More acute results sometimes follow a fatal prognosis, as in two of my patients who resorted to suicide. One was a man with far-advanced carcinoma of the stomach, to whom I recommended palliative treatment and advised against a useless effort at radical treatment. The patient left for his home, but threw himself from a fast train and was killed. In another patient, a man with a large kidney tumor, apparently with many adhesions, my surgical colleague and I advised against an operation. The patient went to another hospital, and apparently received similar advice, for he shot himself through the tumor, and died in a short time. From a broad biologic standpoint it does not, of course, make any difference whether an individual organism dies as either one of these, or as it would if left to its fate. But no matter how one may feel on the subject of suicide, I have always thought these men less fortunate than another patient with carcinoma of the stomach, also far advanced. To him, in advising against an operation, I added that if he could find a good surgeon who was willing to operate, he might submit. He underwent the operation at the hands of one of the most distinguished surgeons in the country, and died on the table. In such a case the result is often unfortunate, because it prevents operations on other and more promising cases, but for the man himself, fighting to the last, it seems to me one can have only respect.

This brings up a question on which a few words may be proper—the question of euthanasia. Every few months some one—usually not a physician—proposes that people with incurable diseases should be killed by some painless method. The plan offers so many opportunities for crime that it would be difficult to carry out, but aside from that it involves important principles. The difficulty of telling when the proper time had come would often be insuperable. Aside from examples of fortitude and other virtues exhibited by the dying, how much the world would have lost if a chronic invalid like Stevenson had the cord of his life snapped at one of the times when the *aes triplex* of his soul seemed battered through! To take a less selfish view, we can think of the "picture of human patience, the visions of ripened character, which have been revelations and inspirations to generations of mankind" (Phillips Brooks), and see these repeated daily in sick rooms of all degrees, while the self-sacrifice and kindness developed in others at such times cannot but be of untold benefit to the race. To most physicians the suggestion of any planned shortening of life must be abhorrent. For countless generations they have been doing their utmost to lengthen life and lessen disease. They have shown how to prevent the plagues that formerly made life almost as bad as a perpetual illness for the survivors, and they have also shown how many deaths can still be prevented. On the other hand, they can, in most cases, so treat the dying man that the bitter anguish often associated with death is absent, that life is not only less painful, but actually longer, so that they will continue to follow the rule of the Father of Medicine, and "give no deadly medicine to any one, even if asked, nor suggest any such counsel."

PREVENTIVE MEDICINE: ITS ACHIEVEMENTS, SCOPE AND POSSIBILITIES.[1][2]

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The terms sanitary science, public or state medicine, and preventive medicine, have frequently been used as almost synonymous. The latter term, "preventive medicine," however, has sometimes been restricted in its application to the prevention of the infectious diseases. In the broad sense, preventive medicine comprises both general prophylaxis and individual prophylaxis, and applies to all forms of disease, not simply to the infectious diseases. Preventive medicine is an applied science, which deals with the preservation of the health both of the individual and of the community.

No subject more vitally concerns the welfare of a community than that pertaining to its healthfulness. How the inhabitants live and how and at what age they die, what is the extent and character of the morbidity occurring among them and what are its causes, are questions of momentous importance. They are essential features in the problem, whose solution will teach men how they may live longer, healthier, and therefore happier lives.

In rural districts the average healthfulness of the inhabitants depends largely on natural conditions, such as elevation, climate, soil, and, to a much less extent, on the artificial conditions produced by the handwork of man. In densely populated cities, on the contrary, the natural conditions become relatively unimportant features in determining the degree of healthfulness, so much do they become subordinated in many cases to the artificial conditions which have resulted from the lives, labor and occupations of the inhabitants. It may be said with certain limitations that the inhabitants of any city in the temperate zone now have it largely within their power to determine what degree of healthfulness their city shall have. A high morbidity and a high mortality in any urban population depend largely on some remediable features of an unsanitary character, such as the sewerage of the city, the occupations, habitations, food and water supplies, and the habits of the inhabitants—all factors which lie to a great extent within their control. Hence, when any city in modern times has a high annual death rate, for example, 30 to 35 per 1,000, as was formerly the case in New York, Liverpool and other cities, instead of a death rate of 17 to 18 or 19 per 1,000, as now exists in London, Berlin and New York, it is because conditions are permitted to exist partly from the neglect, indifference and ignorance of the people, and partly from the lack of proper facilities and necessary efficiency on the part of the authorities.

The expectation of life at birth in certain manufacturing cities of England has been but little more than

[1] Abstract of an Address on State Medicine at the Fifty-fifth Annual Session of the American Medical Association at Atlantic City, June 7 to 10, 1904.

[2] Courtesy of the Journal of the American Medical Association.

one-half that of the healthiest districts of England. Until recent years it was twenty-five or twenty-six years in Liverpool and Manchester, thirty-seven years in London and forty-six years in Surrey, a healthy country district. Even at the age of thirty years, the expectation of life was seven years more for England as a whole than it was for the inhabitants of Manchester. I have estimated that the expectation of life at birth in New York City in 1866 was only a little more than twenty-five years, while in 1903, calculated on the death rate for that year, it had almost doubled, and equaled about forty-two years. For the seven-year period ending in 1873 the death rate under five years in New York City was 123 per 1,000 of the population at these ages. For the year 1903 the death rate under five years was 56. On the present estimated population at these ages, this reduction equals a saving of more than 28,000 lives annually.

In the seventeenth and eighteenth centuries the average annual death rate throughout the civilized world was at least 50 per 1,000 of the population, and probably it was much more than this. From 1628 to 1635 in London, these years being free from pestilence, the average death rate was 50 per 1,000, and the absolute annual mortality for twenty-four years, from 1620 to 1643, was over 70 per 1,000. The death rate during 1902 in London was only 17 and a fraction per 1,000. The mean expectation of life in London for the decennial period, 1771-1780, as calculated by Price's table, was 19.6 years, the annual mortality being 51 or 52 per 1,000; while from 1831 to 1835, although an epidemic year is included, the death rate had decreased to about 32 per 1,000. In 1894 the mean expectation of life at birth for all England had more than doubled that of 1780 in London, so that it was nearly forty-one years, and for London alone it was thirty-seven years. From 1771 to 1780 in London not less than five in each thousand of the population died annually of smallpox; in 1810 this mortality had sunk to two per 1,000, and in 1835 to 0.8, and in recent years it has been an absolutely insignificant decimal. Fever as a cause of death declined in almost the same ratio, from 6.21 in the decennial period ending in 1780 to 2.64 in 1810, and 1.14 in 1835. In the sixteenth century fever, plague, cholera and dysentery destroyed annually 31 out of every thousand of the population of London, or nearly twice the total deaths occurring now from all causes. These diseases at the present time, as causes of death, do not equal in London 2 per 1,000 annually of the population.

In old New York City (comprising the boroughs of Manhattan and the Bronx), for the seven-year period ending in 1873, 616 out of every thousand children born died during the first five years of life. As computed by the death rate under five in 1903, 280 would have died during these same five years. This mortality, while still far too high, equals a reduction of nearly 60 per cent., and as calculated for the estimated population at these ages, means a saving of about 20,000 lives a year in these boroughs. The death rate in the period over five years of age has naturally shown a much smaller decrease, although it has fallen from 19 or 20; as it was in 1865 and 1866, at the time of the organization of the Department of Health of New York City as at present constituted, to about 14 for the year 1903, being a reduction of nearly one-third. This has been accomplished notwithstanding the fact that the old city has increased during this time from a population of about 750,000 to more than 2,200,000.

It does not seem necessary or desirable for our present purpose to consider in detail the causes of this decrease or the special diseases in which it has taken place, but the facts suffice to indicate the great achievements of preventive medicine during the past four decades.

The scope of the sanitary measures in force with reference to the ordinary infectious diseases has in recent years been greatly broadened. More than ten years ago the Board of Health in New York assumed the position that all facilities and procedures looking to the prevention and cure of the infectious diseases should be afforded by the Department of Health. The establishment of the methods for bacteriological diagnosis and the facilities for the serum treatment had their origin there, and have since been widely followed.

General prophylaxis, or that portion of preventive medicine which should come directly under the supervision of the health authorities, has or should have, a broader scope than that indicated, and should include the supervision, not only of those diseases which have generally come within sanitary surveillance, but also all the infectious diseases which from their nature are to a greater or less extent preventable, in addition to all other forms of disease which are the result of unsanitary living, occupations, habitations or surroundings, including those diseases arising from manufacturing, mining, or other industries which, on account of their nature, are peculiarly or especially injurious to health. It should also include with greatly increased powers and breadth of jurisdiction, the surveillance of the water and food supplies and the sewage disposal.

There has long existed a belief in the medical profession, and to a considerable extent it has also been a part of the conception of the sanitary authorities of their functions, that the registration of a case of any kind of infectious disease involved some surveillance of such case by the authorities. The slightest consideration would at once show that with relation to many of the diseases mentioned no such surveillance could be of any real service, and it might be a source of annoyance to the sick person, the family and the attending physician. Much good, however, would result, in my opinion, by such a broadening of the scope of sanitary work, without causing annoyance or being detrimental to any one. I should like, however, to point out that more than a year ago the Board of Health of New York City in the revision of its sanitary code included a number of new sections in relation to the infectious diseases, covering to a large extent the diseases above mentioned. These sections, with the accompanying notes, read as follows:

INFECTIOUS DISEASES.

SEC. 133. It shall be the duty of every physician to report to the Department of Health, in writing, the full name, age and address of every person suffering from any one of the infectious diseases included in the list appended, with the name of the disease, within twenty-four hours of the time when the case is first seen:

A. *Contagious* (very readily communicable): Measles, rubella (Rötheln), scarlet fever, variola (smallpox), varicella (chicken-pox), typhus fever, relapsing fever.

B. *Communicable:* Diphtheria (croup), typhoid fever, Asiatic cholera, tuberculosis (of any organ), plague, tetanus, anthrax, glanders, epidemic cerebro-spinal meningitis, leprosy, infectious diseases of the eye (trachoma, suppurative conjunctivitis), puerperal septicemia, erysipelas, whooping cough.

C. *Indirectly Communicable* (through an intermediary host): Yellow fever, malarial fever.

SEC. 134. It shall be the duty of the commissioners or managers, or the principal, superintendent or physician, of each and every public institution or dispensary in this city, to report to the Department of Health, in

writing, the full name, age and address of any person suffering from any one of the infectious diseases included in the list appended, with the name of the disease, within twenty-four hours of the time when the case is first seen:

A. *Communicable:* Influenza, lobar pneumonia, bronchopneumonia, infectious diseases of the gastro-intestinal canal (dysentery, cholera morbus, cholera infantum, summer diarrheas of infants).

B. *Parasitic Diseases of the Skin:* Scabies, *Tinea tonsurans,* impetigo (contagious), favus.

It will be noted, first, that two main groups of diseases are specified. In the first group, including the more readily communicable diseases, and some others which are not so regarded, registration is compulsory in all cases coming under the observation either of a private attending physician or an institution. These are separated for convenience under three heads: (*a*) The contagious or very readily communicable; (*b*) the communicable, including diphtheria, typhoid fever, Asiatic cholera, tuberculosis, and a number of others, and (*c*) the indirectly communicable, including only two diseases —yellow fever and malarial fever—which are transmitted solely through an intermediary host. In these three classes compulsory registration is required because in all of the diseases in these classes preventive measures, properly executed, are certainly efficient to a very large extent. As to the propriety of the compulsory registration of all of the diseases included under the first heading, "The contagious or very readily communicable diseases," I assume that there can be no reasonable difference of opinion. Measles, Rötheln, scarlet fever, varicella, variola, typhus fever and relapsing fever, certainly without question, should be reported to the sanitary authorities. The necessity for reporting Rötheln and varicella rests more in the danger of confusion of these diseases with measles and varioloid, respectively, than because of the importance of the diseases themselves. Our experience in New York has shown again and again that outbreaks of smallpox have resulted from the failure of inexperienced physicians to recognize mild cases, these having been mistaken for varicella and treated as such. Every case of varicella occurring in the city must, therefore, be reported, and all cases occurring in adults are immediately seen by a trained diagnostician. I say all cases of varicella in adults, because experience has shown that very frequently varicella in an adult is a mild case of variola.

In the second class, called simply "the communicable diseases," there might be some question as to the propriety of the reports in some instances. There would be none, however, with regard to diphtheria, typhoid fever, Asiatic cholera, plague, tetanus, anthrax, glanders and leprosy.

There can not now be, nor can I conceive that there ever will be again, any serious question as to the necessity or propriety for the registration and sanitary surveillance of tuberculosis, although this has been a subject of very bitter dispute and although this disease has come actually under the close supervision of the sanitary authorities in only three or four cities in the United States, and of practically none in Great Britain or on the Continent. Pulmonary tuberculosis was included in the list of communicable and reportable diseases by the New York City Board of Health ten years ago, and the measures adopted for its surveillance have been gradually extended and the lines for its restriction have been drawn closer and closer as each year has passed. Some doubt, however, might properly arise as to the necessity of the inclusion of other forms of tuberculosis than pulmonary tuberculosis in the registration returns, because for the most part these other tubercular diseases are not communicable, or very slightly so.

The infectious diseases of the eye—trachoma and suppurative conjunctivitis—should be included because of the importance of the adoption of preventive measures in the public schools. Few persons had any conception of the great prevalence of these diseases of the eye in the public schools of New York until after the Department of Health adopted some comprehensive measures for their surveillance. Such a vast number of cases was found that the Board of Health was forced to establish special dispensaries and provide special hospital facilities for their care. Only within a few weeks a second hospital and dispensary has been opened, and in the original one in connection with Gouverneur Hospital an average of about 500 patients a day were treated during the year 1903, and nearly 5,000 cases were operated on for trachoma.

Puerperal septicemia should be included in the registration returns because modern aseptic midwifery has shown that in most instances this is a strictly preventable disease, and excepting rare cases of difficult or prolonged labor, its occurrence may be regarded as the result of uncleanliness, negligence or incompetence.

No one, I fancy, would seriously question the propriety of including erysipelas and whooping cough in the registration returns. So far as this country is concerned I assume that typhus fever, Asiatic cholera, plague, leprosy and yellow fever are diseases which will never again call for anything more than occasional or emergency measures for the disposal of isolated cases or small groups of cases.

The registration of cases of malarial fever should be required, not because close surveillance of individual cases is necessary, but because the sanitary authorities should know where the sites of infection are, where the breeding places of the *Anopheles* mosquitoes are to be found, in order that they may adopt proper means for determining the cause of such areas of infection and the proper measures for their removal. In certain sections of New York City investigation has shown that in some instances almost every person living within certain small areas has suffered from malarial fever during the spring and summer months of a single season. Such outbreaks are without any question the result of local remediable unsanitary conditions, which furnish the breeding places for the mosquitoes. But without special information as to the existence of the cases, only to be obtained through the registration of malarial fever, knowledge of the presence of such unsanitary conditions and their removal, may become difficult or impossible. The surveillance in their homes of the individual cases reported is of course not contemplated. That conditions similar to those found in New York exist in other communities, I have no doubt.

Section 134 of the Sanitary Code of New York, covering the second group, deals with infectious diseases of a somewhat different type, and in these the Sanitary Code requires the reporting to the department by public institutions of all cases coming under their observation; but it only requests physicians to report them and does not require such reporting.

Class (*a*) in this group includes some of the more important acute infectious diseases of the upper respiratory tract, namely, influenza, lobar pneumonia and bronchopneumonia, and certain of the more common acute infectious diseases of the gastro-intestinal canal, namely, dysentery, cholera morbus, cholera infantum and the summer diarrheas of infants.

The acute diseases of the respiratory tract referred to should, in my opinion, be registered, because they are

infectious, because they are of prime importance as causes of death, and in order that general and special investigation may be instituted for the collection of data bearing on the modes of infection and the sources and causes of their prevalence and their distribution. New York City has during the last winter experienced the greatest prevalence of these diseases which it has had for many years. In the first four months of the year more than 6,000 deaths occurred from influenza, lobar pneumonia, bronchopneumonia and acute bronchitis.

Investigations in New York and other localities have shown that serious outbreaks of diarrhea and dysentery have occurred in various institutions and in local areas which were probably, if not certainly, preventable, but concerning which the sanitary authorities have had no information. It seems evident, therefore, that these diseases should be made notifiable.

Notification of the parasitic diseases of the skin should be required chiefly because of the liability to the extension of these diseases among children in the public schools.

There are certain very large and important questions of prophylaxis connected with the prevalence of typhoid fever and the milk and water supply of our large communities. The occurrence of great outbreaks of typhoid fever, such as the epidemics at Ithaca, N. Y., and Butler, Pa., during the last year, the prevalence in Philadelphia, Pittsburg and some other cities of the United States and the extensive distribution in the rural districts, constitute a disgrace to American preventive medicine and should arouse the sanitary authorities, the medical profession and the people to the provision of efficient measures and the enactment of suitable legislation for its prevention.

The annual cost of typhoid fever in sickness and death throughout the United States would be computed in terms of tens of millions of dollars. All of this loss we know is certainly preventable. If only a small portion of the annual outlay made by the country for sickness and death from this cause were expended in the education of the people as to the cause and the methods of prevention of this disease and the provision of proper water and sewerage systems, typhoid fever might soon become a rare affection. Unfortunately the city sanitary authorities are often almost powerless in this matter, as their jurisdiction does not extend over the watersheds which supply with water the people under their care, and a supervision by them of the sources of the milk supply is also frequently absolutely impossible.

In New York City detailed investigations of all the cases of typhoid fever occurring within the city limits were instituted several years ago and have been continuously carried on. These show that at least 25 per cent. of the cases occurring in the city have *certainly* received their infection outside of New York City, and a considerable percentage more have *probably* received it outside. Five or six per cent. are the result of contact with other cases, and the remainder are in all probability almost wholly the result of infection through milk or oysters.

A serious objection which may be urged against the adoption of the measures here recommended in regard to the registration of many infectious diseases is the increased labor thrown on physicians which their enforcement would involve. The question may properly be asked: Whether the sanitary authorities in the interest of the general public may call on the medical profession for the expenditure of so much time and labor without making any compensation in return. There are 35 diseases included in the New York list. The English authorities pay a fee for the notification of each case of infectious disease, and I believe that this course might properly be pursued in this country; but this has not been the custom here, and the authorities generally are not now provided with the funds necessary for this purpose.

When the Department of Health of New York City established its bacteriological laboratories in 1892, measures were adopted to make some return to physicians for their interest and labor in connection with the sanitary surveillance of the infectious diseases. A systematic plan was then inaugurated, and has since been consistently followed, to secure their cooperation, by offering free bacteriological examination in the diagnosis and surveillance of various forms of infectious disease. This was first applied to Asiatic cholera in 1892, during the outbreak in New York harbor, and has since been extended to all of the diseases in which existing scientific knowledge made it possible, cerebrospinal meningitis being the latest disease added to this list. The establishment of this system of free bacteriological examinations in the diagnosis and surveillance of the infectious diseases, and the provision of facilities throughout the city for the collection of specimens and the sending of reports to physicians, constituted an entirely new departure in sanitary work and has been of the greatest value. The example of New York has been followed by the sanitary authorities in most of the large cities of this country, by many state authorities, and by authorities generally, in Great Britain and to a certain extent on the Continent. These examinations constitute the return which the authorities here have made to physicians for the reporting of cases and for their assistance and cooperation in their care. This return has a very considerable money value, when we remember that for such examinations the usual fee is $5, and as physicians cannot, as a rule, make such examinations themselves, they must work without the assistance thus afforded, unless they appeal to the regularly constituted laboratories.

What now are the possibilities of preventive medicine as concerns the larger centers of population? In answering this question we may first take as the basis of our reply the conditions found in some of the large cities with the lowest death rates, or still better, the conditions found in some healthy rural districts. In considering the crude death rates, as ordinarily reported, however, one must not ignore the influence of the sex and age distribution of the population on the death rate. As is well known, the death rates in the period of life between five and forty-five years of age are very low, and the death rate among women is lower than among men. If, then, in a city there is a relative excess of the population in the middle periods of life, or an unusual preponderance of women, we may have a crude death rate which seems very low, but which when corrected may be relatively high. For example, the death rate of New York City, as corrected by the English life tables, would probably be at least three points higher than it is. For 1894 the gross rate was 22.76, and the rate corrected by the English tables was 26.46. The corrected death rate of some of the large, rapidly growing Western cities would probably be five or six points higher than the crude death rate reported. The death rate of London at present averages about 17 per 1,000, and when corrected about 18.5 per 1,000, while the Berlin death rate is somewhat lower than this. The crude death rate of Surrey, a healthy rural district in England, is 14 and a fraction, and when corrected would probably be 15.

We can hardly use for a basis of comparison the conditions in any of the cities of this country with very low rates, because the rates have not been corrected, and the basis on which they are calculated cannot always be accepted as correct. Taking all the facts together, and judging of the duration of human life as we know it, we

may accept a corrected death rate of 14 or 15 in a large city as a goal toward which preventive medicine should strive and hope to achieve. If we consider the question from another point of view, as to what is possible in the reduction of the death rate from distinctly preventable diseases, we would reach a conclusion not unlike the previous one.

In New York City it may be assumed that the present tuberculous death rate of 2.7 may, under proper surveillance, with certainty be reduced to 1.2, and 1.5 points would thus be subtracted from the crude rate. The diphtheria death rate, already reduced 65 per cent. by the use of antitoxic serum, should certainly be reduced to one-third of what it is at present; it is now about .6 per 1,000 population. Similar reductions should be possible in the death rate from typhoid fever, measles and scarlet fever. The diarrheal diseases of infants have already been reduced in the last twelve years to one-half of their former prevalence, and should still be reduced more than 50 per cent. Thus more than three points may be subtracted from the crude rate in New York, which in 1903 was 18.18. The rate would then be 15+. The rate for 1903 was the lowest in the history of the city.

The most fatal affections with which we have now to deal in New York are the acute respiratory diseases, including influenza, lobar pneumonia, bronchopneumonia and acute bronchitis. The average death from this group of diseases now exceeds three per 1,000 of the population, and in years when there is an epidemic prevalence of these diseases the death rate may be four or more, as seems likely to be the case this year.

The advances in preventive medicine have as yet not only had no influence in reducing the death rate from this group of diseases, but, on the contrary, there has been a slow and continuous increase. I cannot at this moment point out the method or the means by which a reduction is to be brought about, but still I firmly believe that with fuller knowledge such a reduction will become possible in the great cities where these diseases are so prevalent.

Something can be accomplished through the closer sanitary surveillance of the occupations and conditions under which the lower classes work, especially the noxious trades. Something, too, may be done through a closer supervision of foods to ensure their purity and freedom from adulteration.

A very difficult problem arises in connection with the diseases of the circulatory apparatus and the kidneys. My investigations have shown that in New York City a large increase has taken place, due to these causes, during the last twenty years. The acute respiratory diseases, cancer and diseases of the circulatory apparatus and the kidneys are the only important causes of death which have shown an increase during this period. The increase in cancer amounts to about 15 per cent., and the increase in the acute respiratory diseases amounts to about 15 per cent., while the increase in the diseases of the circulatory apparatus and kidneys combined equals about 40 per cent. In making this statement I have taken fully into consideration the possible influence of greater accuracy in the death returns, *i.e.*, the inclusion formerly of these under other causes of death; but after making all allowances, it seems to me without question that an increase equaling 40 per cent. has taken place.

Yellow Fever in Mexico.—Meridia reports to the Superior Board of Health of Mexico five cases of yellow fever, and announces increased sanitary activity to prevent the spread of the disease. A yellow fever patient was found in the street in Tehuantepec and properly cared for.

ORIGINAL ARTICLE.

PATHOLOGY AND TREATMENT OF SIMPLE FRACTURE OF THE PATELLA.

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A large amount of attention during the past ten or fifteen years has been devoted to the consideration of the clinical features of simple fracture of the patella. Prior to that time, and, consequently, before the introduction of aseptic methods, this lesion was usually treated conservatively, although in many instances the final result proved unsatisfactory, for not only was the range of movement in the affected knee-joint permanently restricted, but in addition its capacity to support the weight of the overlying body was greatly diminished. With the introduction of aseptic surgery, it was believed that much more satisfactory results could be obtained by the exposure and suture of the fragments, a procedure which afforded an excellent opportunity for acquiring a more accurate knowledge than had hitherto existed of the extent and nature of the damage to the bone and capsule. This procedure, in the early stages of its development was occasionally complicated by septic arthritis, and a stiff joint, or the loss of the affected extremity, or even of the life of the patient, was the unfortunate and distressing result.

With the perfection of aseptic technic, however, this risk of infection has been greatly diminished, although with justice it cannot be said to have been completely eliminated, but the disastrous results of infection are rarely seen. Notwithstanding this fact, however, the operation, although it has many enthusiastic adherents, still suffers the unmerited antagonism of the ultraconservative. These condemn any radical procedure on account of the risk of infection, no matter how remote the possibility of that complication and continue to advise conservative treatment, while admitting that operative interference usually provides a much more satisfactory result in a shorter time.

The less satisfactory result in cases treated conservatively, namely that of a stronger or weaker fibrous union, is ascribed by different observers to the presence of one or more of the following conditions: The paucity of the blood-supply of the fragments, their separation resulting from the effusion in the joint and from the contraction of the quadriceps, their occasional tilting on either a vertical or horizontal axis or on both, the interposition of blood-clot or of torn portions of the capsule or periosteum, and the difficulty of retention after approximation has been satisfactorily accomplished. From the difficulty of ascertaining the exact nature of the cause which, if not remedied, contributes chiefly to the development of fibrous union, as well as from the difficulty of recognizing the presence of an actual rotation of the lower fragment so extreme as to place its fractured surface parallel

to the overlying skin, it is impossible for the surgeon to accurately foretell the character of the ultimate result in cases where conservative treatment is adopted. While, in some cases, the union is sufficiently strong to permit ultimately of a return to a laborious or athletic occupation, the weakness of the extremity in many others permanently precludes such a means of livelihood—certainly a serious out-look for a very large fraction of the community. On the other hand, in case of operation and in the absence of infection, every assurance of complete and prompt restoration of the strength of the knee can be given to the patient and an extremity can be promised which will be sufficiently strong to permit of the patient's engaging in any laboring occupation which he may select.

The fact that the most advantageous form of treatment still occupies debatable territory seems to warrant the report of cases in which the operation of suture has been performed, as well as a statement of the lessons which they may have taught:

Case I.—J. M., male, twenty-eight years old; admitted to the Presbyterian Hospital, January 13, 1901. Patient was kicked by a horse on the left knee. He fell to the ground and could not rise. On examination there are the signs of a transverse fracture of the patella at the junction of its lower and middle third, the fragments being separated about 1¾ of an inch. There was moderate distention of the joint. Operation one week later. Gas and ether; usual procedure. The line of fracture extended laterally through the external part of the capsule for a distance of an inch. Suture. The joint was closed without drainage.

Case II.—L. G., male, forty-five years old; admitted to the hospital January 21, 1902; patient slipped on the ice and fell. He was unable to rise or to extend the knee. Examination reveals a transverse fracture through the middle of the patella, the fragments being separated by a distance of an inch. There was great distention, the circumference of the affected joint exceeding that of the normal side by three inches. At the end of ten days through the application of ice, massage and elastic bandages, this had decreased two inches. Operation, gas and ether; usual incision and exposure. There was a bilateral rent in the capsule on either side of the line of fracture, more extensive on the right side. Suture with drainage for forty-eight hours through a counter-opening on the right side.

Case III.—W. J., male, thirty-five years old; admitted to the hospital June 18, 1902. Eleven years ago, patient fractured the right patella. Good fibrous union was secured and an excellent functional result obtained by immobilization with plaster and straps. To-day, while lifting a heavy case, patient felt the right knee give way and he fell to the ground. On examination there is a transverse fracture just below the middle of the patella, the fragments being one-half an inch apart. Moderate effusion. One week later, operation; gas and ether. The capsule is torn on either side of the patella for a distance of about one inch. Closure without drainage.

Case IV.—C. O., male, forty-five years old; admitted to the Presbyterian Hospital November 3, 1902. To-day patient was thrown down, the right knee striking the sidewalk at a point just below the apex of the patella. There was loss of function. Examination shows a transverse fracture of the right patella at the junction of its upper three-fourths with its lower fourth. There is moderate effusion with a distance of three-quarters of an inch between the fragments. Operation four days later; gas and ether. The capsule was found torn for a distance of an inch from the inner extremity of the fracture. There was a rotation of the lower fragment on its horizontal axis through an arc of 90°, so that its fractured surface was parallel to the overlying skin. This malposition was corrected without difficulty.

Case V.—Male, fifty-five years old; admitted to the hospital January 12, 1903. One week ago, patient slipped and fell, sustaining a fracture of the right patella through indirect violence. On examination, there is a transverse fracture just below the center of the bone. There is moderate distention of the knee-joint. The fragments are about one-quarter of an inch apart. Operation two days after admission; gas and ether. On exposure the lower fragment is found to have become rotated on its horizontal axis through an arc of 90°, so that its fractured surface is directed toward the skin. On palpation, prior to the operation, the presence of this abnormal position was not suspected, the fractured surface not feeling unlike the normal anterior surface of the bone. At the time of operation this smooth feel of the fractured surface was found to be due to the obliteration of its irregularities by a thick layer of clotted blood. In this case the line of fracture was irregular and each fragment was still further bisected by a vertical fissure extending about midway between its lateral margins. No difficulty was experienced in restoring the position of the lower fragment and after suture the wound was closed without drainage.

Case VI.—P. T., male, thirty-eight years old; admitted to the Presbyterian Hospital January 25, 1903. During the past two weeks, the patient has received repeated trauma over the region of the right knee. There was no loss of function until one week ago when patient fell again. Examination reveals extensive swelling of the joint with a transverse fracture just below the center of the patella. There is a distance of about one-half an inch between the fragments. Operation five days later; gas and ether. The joint was found greatly distended with clotted blood. The upper fragment was bisected by a vertical fissure. The line of fracture was continuous with a bilateral rent in the capsule more extensive on the inner side. A counter opening was made on both sides for drainage.

Case VII.—P. B., male, forty-five years old;

admitted to the Presbyterian Hospital March 25, 1903. On day before admission patient fell down a flight of steps. There was immediate loss of function of the left leg. Examination revealed a greatly distended left knee and a transverse fracture of the patella at the junction of the upper and middle third. The fragments are about half an inch apart. Operation two days later; gas and ether. The joint was found to be greatly distended with blood clot. There was a small bilateral tear in the capsule opposite the line of fracture. An unusual amount of oozing seemed to warrant drainage, through a counter-opening on either side.

Case VIII.—J. H. S., male, twenty years old; admitted to the Presbyterian Hospital April 15, 1903. Six days ago, while attempting to reach some object on a high shelf by jumping, patient felt something give way in the right knee. There was immediate disability. On examination, there is moderate swelling both in the joint and the overlying soft parts. There is a transverse fracture at the junction of the lower and middle third of the patella separated by an interval of about one-half an inch. Operation two days after admission. A slight tear extending outward from the line of fracture was found in the capsule. A counter opening was made below and external for drainage.

Case IX.—C. B., male, thirty-five years old; admitted to the Gouverneur Hospital June 5, 1903. On day of admission patient fell from a truck, striking the left knee against the sidewalk. On attempting to arise, patient was unable to walk. Examination reveals a fracture at the junction of the middle and lower thirds of the left patella. There was moderate joint distention. Operation two days after admission; gas and ether. There was some inversion of the capsule between the fragments. Wound closed without drainage.

Case X.—L. G., male, thirty-nine years old; admitted to the Gouverneur Hospital May 15, 1903. On day of admission while attempting to push a hand-truck up an elevator shaft, patient lost his footing and slipped, feeling something give way in the right knee. On attempting to arise was unable to walk. On examination there is a fracture transverse at the junction of the lower and middle thirds of the right patella. There is moderate joint distention. The fragments are separated by three-quarters of an inch. Operation two days after admission; gas and ether. The capsule was torn especially on the inner side. Drainage through a counter opening on the inner side of the joint.

Case XI.—M. K., male, thirty-five years old; admitted to the Presbyterian Hospital November 30, 1903. This morning while going down stairs, the patient slipped, the right foot doubling beneath him. There was immediate loss of function and sharp pain in the vicinity of the left knee-joint. On examination there is moderate distention of the left knee-joint. There are the physical signs of a transverse fracture of the patella at the junction of its middle and lower third. There is an interval of three-eighths of an inch between the fragments. Operation two days after admission; gas and ether. The fragments were exposed by the usual incision. The knee-joint and the contiguous soft parts contained a considerable amount of clotted blood. The inner portion of the capsule was torn for a distance of an inch extending laterally from the line of fracture. The fragments of the patella and the torn capsule were sutured with chromic gut. Closure without drainage.

Case XII.—J. J. M., male, eighteen years old; admitted to the Presbyterian Hospital, January 4, 1904. This afternoon while exercising in the gymnasium, patient fell from a horizontal bar striking heavily on the left knee. Immediate loss of function and patient was conscious of the fracture taking place. On examination there is a transverse fracture of the left patella, at the junction of its middle and lower third; there being an interval of an inch between the fragments. There is extreme distention of the knee-joint and considerable discoloration of the overlying skin. Local application of cold with a posterior splint for one week with only slight diminution in the degree of distention. Operation; gas and ether. Usual incision, with the opening of the joint; a large amount of clotted and fluid blood escaped in a jet. There was rotation of the lower fragment on a horizontal axis through an arc of 90 degrees, the fractured surface looking directly forward. There was a bilateral rent in the capsule, extending from either extremity of the line of fracture, more extensive on the left side. The abnormal position of the lower fragment was easily corrected, and after thorough irrigation of the joint, the fragments and the torn capsule were united with chromic gut sutures, a small rubber tissue drain being introduced through a counter opening just in front of the external lateral ligament. Usual dressing.

Case XIII.—J. F., male, twenty-three years old; admitted to the Presbyterian Hospital January 20, 1904. This afternoon, patient was kicked by a horse on the right knee, falling to the ground. On being assisted to his feet, patient found that walking was impossible. On examination the right patella was found to be transversely fractured just below its center. The fragments were separated three-quarters of an inch. There was considerable swelling of the joint and overlying soft parts. Operation two days later; gas and ether. Through the usual incision the fragments were exposed and the joint opened; considerable clotted blood escaping from the severed soft parts and the joint cavity. There was a rent in the capsule extending from the outer extremity of the line of fracture transversely for a distance of an inch. There was no rotation of either fragment. After irrigation, the fragments and torn capsule were sutured with chromic gut and the skin closed, without drainage.

Postoperative.—In every case, primary union was secured and there was complete restoration

of joint function, both in the arc of flexion and extension and in joint strength as a whole.

Pathological Features.—Although, in all the cases, here reported, the line of fracture has been essentially transverse, the point at which it has passed through the patella has varied materially, being usually nearer the lower extremity or apex than the upper part of the bone. This variation is probably explained by the fact that the line of fracture must represent the mean between the force of the contraction of the quadriceps muscle and the resistance of the ligament patellæ being influenced as well by the angle of flexion at the time the fracture occurred, factors which necessarily vary in different cases.

The transverse line of fracture is not infrequently supplemented by a vertical one bisecting one or both fragments, a condition frequently recognized only at the time of operation for the reason that the fragments so formed are usually held in close apposition by untorn periosteum. In cases of this character, the result of muscular contraction, the vertical line of fracture must be due to the sudden and forcible action of the lower portions of the vasti insertions in either lateral margin of the bone. If present, such a condition may easily diminish the strength of the ultimate union of the fragments.

In simple transverse fracture, the fragments are usually separated by an interval of from between one-half and three-quarters of an inch, the interval always filled in with coagulated blood, which is firmly adherent to the roughened fractured surfaces and is continuous with a similar clot permeating the overlying aponeurotic layers and partially or completely filling the articular cavity. In no case here reported has interposition of periosteum been observed; on the contrary, the periosteum has not even been detached from the fractured margins. Occasionally, however, a torn portion of the adjacent capsule has been observed to lie between the fragments.

In the majority of cases, there has been a more or less extensive tear of the capsule; occasionally unilateral, generally asymmetrically bilateral, it has always been directly continuous with the line of fracture, and has penetrated the synovial investment of the joint. This "fracture" of the capsular ligament presents, frequently ragged edges, which must be removed to secure proper apposition. Failure to observe this precaution may lead to ultimate weakness of extension. The degree of damage to the capsule can only be determined, and its proper repair accomplished through an exploratory incision.

In three cases (Nos. 4, 5, and 12) the lower fragment has been found rotated on its transverse axis through an arc of 90 degrees, so that its fractured surface was in apposition with the subcutaneous fat. One might very naturally infer that the diagnosis of this malposition could have been made prior to the exposure of the fragment through direct palpation of its roughened fractured surface; such recognition proved impossible, however, because in each instance its irregularity was found to have been effaced by clotted blood. It is scarcely necessary to add that such a malposition, even if capable of recognition, could be corrected only through an open incision and that in the absence of such correction any conservative plan of treatment can only achieve failure.

Successful results obtained by conservative methods seem therefore to be a matter of good fortune, depending more upon the possibility of satisfactory approximation and retention of the fragments and upon the absence of tears in the capsule than upon the ability of the surgeon to recognize and rectify many of the conditions which interfere with proper union, and it is probably this very fact that accounts for the wide variability in the character of the result in cases which present similar physical signs and which are treated by the same conservative method; in those where satisfactory results are achieved, there has been no interposition of torn capsule, no tear or only very slight tears in the capsule and no rotation of the lower fragment, whereas poor results are the direct consequence of the persistence of one or more of these conditions, Nor is it possible to determine the presence of a rent in the capsule by the nature of the injury. To be sure, in fracture, the result of overmuscular action, the capsule is usually torn, while in those due to direct trauma, the damage inflicted may be limited to the bone. But both conditions are so frequently combined and the patient's statements so unreliable, because of the unexpectedness of the accident that accurate analysis of the cause may prove impossible.

The general plan of treatment which has been carried out in the cases here reported may be considered under three different heads:

1. Prior to operation.—The patient is kept quiet in bed and local applications of heat or cold made to the affected joint, which is placed on a posterior splint. These measures are continued until the local heat and tenderness subside and if possible, until some decrease in the degree of joint swelling has taken place. This usually requires from two to ten days, according to the extent of damage to the capsule and the amount of extravasated blood in and about the joint. If, at the end of that interval, there has been no decrease in the joint swelling, operation should no longer be delayed.

2. Operation.—The fragments of the patella and the torn capsule are most satisfactorily exposed by a curved incision joining with its convexity downward corresponding points between the patella and either tuberosity of the femur. The flap, thus formed, composed of skin and subcutaneous tissue is then reflected upward beyond the line of fracture.

After cessation of hemorrhage, all old extravasated blood is thoroughly removed; that beneath the skin and between the fascial layers preferably with a Volkmann spoon. The same instrument may be used for the removal of the blood between the fragments as well as for the

freshening of their surfaces. The clotted blood in the joint is most easily removed by irrigation and sponging. For this purpose a warm sterile salt solution or ordinary warm water that has been boiled proves least irritating to the synovial membrane.

The periosteum is then reflected backward a sufficient distance from the edge of either fragment to permit of the application of the drill which is passed obliquely so as to penetrate the fractured surface just in front of the posterior articular cartilage. Two such canals are made in corresponding parts of each fragment, heavy chromic catgut being used for the subsequent approximation.

The joint is once more thoroughly cleansed by irrigation, followed by the approximation of the fragments and the sutures of the tear in the capsule, the latter also with chromic gut. Throughout the entire procedure, the danger of infection is materially lessened if the removal of the blood, the irrigation and the subsequent sponging and drying are accomplished without the introduction of the finger of the operator or of any assistant into the joint cavity.

The question of drainage depends upon the amount of oozing that persists after the final irrigation. If this is slight no drainage is necessary; if excessive, a lateral opening is made on one side or both sides of the joint just anterior to the lateral ligament and a very small drain of rubber tissue inserted. This is invariably removed at the end of the forty-eighth hour and not replaced.

The deep fascia, the skin and subcutaneous tissue are now sutured with chromic gut. After the application of a sterile dressing, the limb is immobilized by a plaster splint reaching from the groin above to the malleoli below.

As a substitute for the drilling and suture of the fragments, the suture may be inserted through the overlying periosteum only. There is no question but that by this method, which requires less time, as accurate apposition of the bony fragments can be secured as by the suture of the fragments themselves, and also that, in the majority of cases no subsequent separation of the fragments occurs. The writer has always felt, however, that additional security is afforded by the suture of the bony fragments as well as of the overlying periosteum, and that in particular, the restoration of energetic active motion could be more quickly and safely accomplished.

Postoperative Course.—There is usually considerable pain, most severe directly after the operation and gradually diminishing until at from the fifth to the seventh day, it has completely disappeared. The temperature varies between 101° and 103° F., reaching normal about the tenth day. The degree of temperature as well as the length of its persistence, although in part due to the reparative process in the divided tissues, seems to depend chiefly upon the amount of extravasated blood. The writer has repeatedly observed as high a temperature as 103° F. in cases of hemarthrosis of the knee without the presence of fracture or wound, the temperature decreasing as the blood was absorbed. The pulse rarely exceeds 100, ranging usually between 80 and 90. A return to the normal rate is more quickly reached than is the case with the temperature.

Postoperative Treatment.—At the end of forty-eight hours, the drain, if any has been inserted, is removed and not replaced, a fenestra being cut in the splint for that purpose. In the absence of a drain, a change of the dressing is necessary only to make the patient more comfortable, the more or less completely desiccated compresses being replaced at the end of the third or fourth day. At the end of the tenth day, the sutured patella is moved gently from side to side, to prevent the formation of adhesions between its articular cartilage and that of the trochlear of the femur. At the end of the third week, the splint is removed, and the quadriceps daily massaged. At the same time, a moderate amount of passive flexion of the knee is practised. At the end of the fourth week, active flexion is allowed and the patient begins to bear some weight on the affected extremity and to walk. At the end of the fifth week, the patient is encouraged to go up and down stairs and as soon as possible thereafter to return to his regular occupation. During this period, there has been a gradual improvement in the degree of active flexion of the knee, and at the end of two months the patient should be able to bend the knee, to at least a right angle. In from four to six months, normal flexion may persist. No atrophy of the quadriceps muscle has been observed.

In all cases of fracture of the patella in which this operation has been performed, there is a permanent increase in the size of the bone affecting chiefly its transverse, and to a less extent, its antero posterior and vertical diameters. Such an increase has not affected unfavorably the integrity of the femur-patella joint, the formation of possible adhesions being prevented in each case by early lateral passive movement of the sutured fragments, as described in the after-treatment.

A careful consideration of the cases here reported, seem to warrant the following conclusions:

1. That, owing to the not infrequent uncontrollable rotation of the lower fragment, through an arc of 90 degrees on its horizontal axis, accurate apposition of the fractured surfaces cannot always be secured and under these circumstances the ultimate result of conservative treatment could scarcely prove satisfactory.

2. That suitable apposition may also be prevented by the interposition of torn shreds of capsule, by extravasated blood clot and possibly also by the interposition of untorn periosteum, conditions which can be recognized and remedied only by exploration.

3. That suture of the fragments permits of simultaneous suture of the torn capsule, a pro-

cedure of the greatest importance for restoration of joint security.

4. That the results of suture are almost invariably excellent, and that the risk of operation is comparatively slight.

5. Finally, that in no way does the writer desire to belittle the risk of operation. On the contrary, the exercise of the most rigid aseptic precautions both in the preparations for and in the carrying out of the operation itself cannot be too greatly emphasized. Far better, in any instance, where for any reason, the highest degree of surgical asepsis cannot be practised, to advise some non-operative procedure than to subject the patient to the possibility of a septic arthritis with all its direful consequences.

MEDICAL PROGRESS.

NEUROLOGY AND PSYCHIATRY.

Alcohol a Cause of Locomotor Ataxia.—It is generally considered that syphilis is the main cause of tabes, yet tabes is a very rare disease among women, though syphilis is not uncommon. Erb's statistics gave 19 cases of tabes among women to 350 in men; Fournier found the proportion one to 26, while Mendel found it one to four. Fournier also found that 95 per cent. of tabetics were syphilitic, while Berger found only 20 per cent. and Remak 23 per cent. Yet syphilitic lesions, even those of the central nervous system, are comparatively easy to cure, while tabes is practically incurable. PAPADOPOULOS (Le Progrès Médical, March 5, 1904) has practised twenty years in Asia Minor where syphilitics among women as well as among men, are particularly common, and where, because of inefficient treatment at the outset, tertiary lesions are usual and of the marked type rarely seen in Europe. And yet locomotor ataxia is practically unknown among women, and exceedingly rare among men. There is a great difference in the social life of the Orient from that of Paris and London. Alcoholism is rare, everybody drinks water. Practically the only liquors to be had are wine, raki and brandy, and these are taken only on special occasions. Wine is prohibited by the Mohammedans, though raki and brandy are allowed, the Christians of Asia Minor are teetotalers, not even drinking wine, and among the Mussulmans alcoholic drinks are not used. So, it may be accepted that syphilis, even in its worst manifestations, is common in Asia Minor, while the taking of alcohol in large quantities is quite rare. At the same time locomotor ataxia is very rare. So it is difficult to believe that locomotor ataxia owes its origin to syphilis, while one may be readily led to believe that alcohol is an important factor in the production of tabes.

New Sign of Basilar Meningitis.—The early diagnosis of meningitis in children is often very difficult and usually only one or two of the many possible signs may be present. G. W. SQUIRES (Med. Rec., March 26, 1904) has found that a sign, not heretofore described, has been invariably present in his cases, frequently as early as the fourth or fifth day. It is a rhythmical dilatation and contraction of the pupil and is elicited in the following way: The child's head is placed between the knees of the physician face upward with the body of the child supported on the bed or table. Gradual and forcible extension of the head upon the spinal column is then made. As the head is extended the pupils will be seen to dilate and the more extreme the extension the more marked the dilatation. Upon flexion the pupils contract so that when the chin is forcibly brought to the manubrium the pupils are well closed up. This can be repeated several times during the minute and each time the pupillary phenomenon will appear.

Prognosis in Epilepsy.—Almost all sorts of indications have been sought for in efforts to determine some ground for prognosis in this disease. WILLIAM A. TURNER (Lancet, April 9, 1904) concludes from a study of 161 cases, that the mental features of the interparoxysmal state should be divided into four classes. The first contains those epileptics without any obvious mental impairment, the fourth, those having the highest grade of dementia. Sex has little influence upon the mental condition, but it may be stated in general terms that males are numerically more afflicted than females, 91 to 78 per cent., but that the highest degree of dementia is somewhat more common in women than in men. A family predisposition to epilepsy and insanity favors the supervention of a certain degree of mental impairment. The duration of the disease influences the mental condition to some extent. Mental activity and mental deficiency are, however, observed in cases in which the disease has lasted respectively for over twenty years and for less than five. The age at the onset of the convulsions has some influence upon the subsequent mental conditions, and the earlier the onset the less probable the persistence of a clear mind. The character of the attacks have an important relation to the mental condition, the profoundest degrees of dementia being most commonly seen when the major and minor attacks coexist. When grand mal occurs alone, mental health is as common as mental deficiency. There is a direct association between the frequency of the fits and the mental state. Fits recurring in series are accompanied by a high grade of dementia. The term "facies epileptica" is found more commonly in the higher grades of dementia, but it is occasionally observed in patients whose memory alone has been impaired. Of the 161 cases used in the preparation of this paper, the intellectually normal represented 13.6 per cent.; those with impaired memory, 31.6 per cent.; feeble minded, 25.4 per cent.; demented 29.1 per cent.

The Movements of the Superior Intercostals in Hemiplegics.—The symptomatology of the brain, particularly that which subserves localization outside of the motor areas is in an evolutionary stage. It is still quite unsatisfactory. The uncertainties of cortical and subcortical lesions are based upon a very crude physiology outside of a few simple principles. In this connection the clinical study of L. P. CLARK, on the movements of the superior intercostals muscles in hemiplegics is of interest (Am. Jour. Med. Sciences, December, 1903). The work consists of a review and confirmation of the observations of Hughlings Jackson, which were first published by him in 1895. This principle was to the effect that during quiet respiration in hemiplegics there is overaction of the superior intercostals on the paralyzed side, while during forced respiration the reverse results—the sound side overacts. In Jackson's original 28 cases he reported the presence of this symptom in 18. Clark has examined 161 cases and found it present in all lesions of the brain where the integrity of the capsular fibers was destroyed. In all the symptom was to be detected by inspection or palpation. The importance of such a symptom is obvious. The author unfortunately has not given a careful analysis of the cases, especially regarding the degree and extent of brain lesion. Granting the constancy of the symptom in destructive lesions of the capsule we have yet to determine the precise cortical elements which

are so grossly affected in the extensive capsular disease. From Clark's supposed pathology and the experimental work of Spencer, the cortical accelerator and arrest respiratory centers quoted by him (Lancet, Dec. 16, 1899) one is interested to know whether definite focal lesions in these brain areas by tumor or abscess will give this symptom. It should certainly be looked for. If present, it may rank with astereognosis in focalizing value. Even if respiratory arrest and acceleration are functions presided over by relatively large brain areas, which seems to be the case for the stereognostic instinct the former may still broadly prove of focalizing value. To settle the latter point, further careful experimental and clinicopathological work is necessary.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Agglutination of Tubercle Bacilli in Animals.—The blood-serum of healthy rabbits never agglutinates tubercle bacilli but if rabbits are experimentally infected, the test is positive in only one-half of the animals, according to E. Schwarzkopf (Münch. med. Woch., April 12, 1904). The agglutination is most frequent about three weeks after infection and gradually decreases as the tubercles surround themselves with connective tissue. This corresponds with the clinical experience that the phenomenon is more common with tuberculous patients in the first stage than with those in the third. Animals near death also failed to react. Animals infected with strongly virulent bacilli of bovine tuberculosis agglutinated less frequent than where less virulent germs of human origin were employed. Positive results were occasionally obtained where no pathological lesions were found. It seems very improbable from these experiments that the test will ever be of much diagnostic value in man.

Crystals in Icteric Feces.—In the stools of icteric patients a large number of needle-shaped crystals are often found, whose composition is not known, since insoluble in all the ordinary media. By means of a special process, T. Kimura (Münch. med. Woch., April 12, 1904) was able to isolate them in a pure condition. The ash contained much calcium and a little sodium and magnesium, which was held in combination with stearic and polmitic acid in the form of insoluble soap.

Precipitin Reaction in Mummies.—An interesting observation is recorded by J. Meyer (Münch. med. Woch., April 12, 1904), showing that the precipitin reaction is absolutely specific for human blood, no matter what the source or age of this blood. The musculature of several mummies, one of them five thousand years old, was extracted and then tested in the usual way. A precipitate was only obtained when the serum of rabbits treated with human serum was added; when the serum of other animals was added, the fluid remained permanently clear, just like with fresh material.

Improvement in Widal Test.—It is often impossible for the practising physician to perform the Widal test, since he lacks the bacteriological apparatus to grow typhoid germs. Recently a permanent culture of bacilli treated with formalin has been recommended, and D. Ehrsam (Münch. med. Woch., April 12, 1904) has tried this in a large number of cases and has obtained equally as reliable results as with fresh cultures. In all cases of typhoid agglutination was obtained in three to twenty-four hours, while in all other febrile disorders the test was negative.

Ferments in the Urine.—Every urine contains proteolytic ferment, and J. Grober (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 5 and 6) points out that this is generally pepsin, while during the absorption of pathological infiltrates and exudates, and in diabetes mellitus, trypsin is occasionally found. By determining the critical temperature the author could prove that gastric and urinary pepsin are identical bodies; furthermore, if the stomach in animals is extirpated no more pepsin will be excreted. During fasting the amount is considerably higher than normally. It is probable that the excess of ferment is absorbed by the blood as zymogen and is again converted into pepsin, where it encounters an acid reaction, as in the kidneys.

Cryoscopy for Exudates.—L. v. Ketly and A. v. Torday (Deutsch. Arch. f. klin. Med., Vol. 79, Nos. 5 and 6) believe that cryoscopy is of some value in determining if a collection of fluid will be absorbed spontaneously or not. Thus, in chronic pleural exudates, absorption can be looked for where the lowering of the freezing point is close to or less than that of the blood-serum. This, however, applies only to those cases where there is no fever or other sign of pleural inflammation, since here an increase of effusion can be expected. In case of hydrothorax secondary to nephritis, the freezing point of the serum must also be determined and the figures are only of value if renal function is satisfactory. The rules for pleural fluids also hold for those depending on tuberculous peritonitis. In other peritoneal transudates, cryoscopic examination is in place only where there is no mechanical obstruction and the heart's action must always be taken into account before giving a decision. It is often hard to distinguish between exudates and transudates since the specific gravity and amount of albumin may vary within wide limits in both. The authors had hoped that cryoscopy might be of some help, but numerous experiments conducted in this direction were without result.

Pathology of Pneumobacillus Pneumonia.—There seems to be little doubt at the present day that the Friedländer bacillus is able to set up a typical pneumonia like the pneumococcus. Certain well-marked differences in the pathology of both infections are pointed out by I. Kokawa (Deutsch. Arch. f. klin. Med., Vol. 80, Nos. 1 and 2). The diseased portions of the lung are generally much increased in volume; they may involve an entire lobe or form multiple foci throughout one lobe. The cut section appears granular, rarely smooth and is characterized by an extreme slippery sensation to touch owing to the presence of a large amount of mucus, especially in the early stages. This is not, however, pathognomonic, for it also occurs in the later stages of diplococcus pneumonia. Histologically there are changes in the alveolar epithelium in the form of swelling, proliferation, desquamation and necrosis of the cells, and migration of red and white cells into the alveoli. In the stage of red hepatization, the hemorrhage is not as marked as in pneumococcus pneumonia, while during gray hepatization the fibrin formation is less pronounced. The emigrated leucocytes appear larger owing to the presence of vacuoles; they, together with the epithelial cells, form the most abundant constituents of the exudate during the later stages. The behavior of the bacilli in the diseased tissue is rather typical. They are taken up by the epithelial cells and leucocytes, which swell up and develop vacuoles in their interior. These vacuoles are derived from the mucoid capsule of the germs and always contain one or more germs. The pleura and bronchi show the same lesions as other forms of pneumonia. A number of other infections may be caused by the capsule bacillus, thus pleuritis, pericarditis, endocarditis, otitis media, abscesses, phlegmons and osteomyelitis are occasionally reported. The meninges seem to be affected equally as often as with pneumococci. The fact that a pneumonia could be set up in three guinea-pigs by injecting cultures of the Friedländer bacillus, seems to speak for the specific character of the germ.

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THE AMERICAN MEDICAL ASSOCIATION.

THE fifty-fifth annual session of the American Medical Association at Atlantic City, which was held on Tuesday, Wednesday, Thursday and Friday of this week, and a report of which will be found in our society proceedings for this week, proved to be the banner meeting of the organization.

The attendance amounting to over 2,600, was the largest ever recorded. It is the first time that the 2,000 mark has been passed. Many more New Yorkers than are usually seen were present and at the General Session it was announced by the President that all members of the New York State Society were formal guests of the Association and would have all the rights and privileges of the meeting. The various sections were very well attended and the interest aroused by the discussion of practical questions was very manifest.

One of the noteworthy features of this meeting was the enthusiastic subscription of some $6,000 to the Dr. Walter Reed memorial fund. After the announcement of the Rush monument committee that its labors were over, Dr. Wm. H. Welch stated in very forcible way the eminent suitability of having a proper memorial for the physician who succeeded in solving the problem of the eradication of yellow fever. After the preliminary announcements of subscriptions, among which the $500 from the California State Society and the $250 from Dr. Reed's brother officers were received with enthusiastic applause, the offering of subscriptions became contagious and over forty names were presented (see list in our account of the proceedings) with the promise of $100 and about one-half as many for $50. The work of the monument committee is to be vigorously pushed and the subject brought to the notice of Boards of Commerce and of Trade as well as large corporations, for Dr. Reed's work has definitely removed one of the great hindrances to commerce. It is thought that worthy commemoration of what he accomplished will thus be secured.

The scientific business of the meeting proved of much more than the usual interest, as was indicated by the attendance. At the medical section the discussion of typhoid fever on the first day showed that all are now agreed as to the necessity for the early diagnosis and surgical treatment of typhoid perforation. This diagnosis must not be made from the subsequent peritonitis but from the symptoms following immediately upon perforation. Dr. Osler considers that any sudden change in the condition of a typhoid patient must be made the subject of careful investigation.

Dr. Wilson, of Philadelphia, whose opinion as to the advisability of immediate operation for perforation in typhoid fever, announced nearly twenty years ago, is now a classic *locus* for comment, says that he hopes that the time will come when operations for the relief of severe and threateningly progressive hemorrhage in typhoid fever will be as common as are now the operations for intestinal perforation. It seemed a far away ideal, twenty years ago, that typhoid fever patients should, within two to three hours after perforation, be in the surgeon's hands, but the happy consummation has come with most gratifying results. Not to progress is to recede, and undoubtedly the next step will be the tying of bleeding arteries.

In the surgical section, while the surgery of the lower part of the abdomen with the inevitable appendicitis still continues to occupy a prominent place, there is a distinct trend toward a greater interest in the upper abdominal segments. Discussions were mainly occupied with various forms of enterostosis and with the surgery of stomach, biliary and pancreatic affections. In the

midst of these there came the consideration of one of the conditions—rupture of enlarged mesenteric glands—which simulate perforation of the intestines in typhoid fever. This is undoubtedly the condition the spontaneous cure of which has given rise to the impression that typhoid perforation is not necessarily fatal, even when no fecal fistula follows. Dr. J. C. Wilson described some cases of simulating perforation in typhoid which are related to these.

The new organization of the American Medical Association is now working smoothly and it is evident that close union of the various component bodies on a thoroughly representative basis is possible without undue expenditure of time in administrative effort and with the proper exclusion of clique politics. It seems that an era of splendid accomplishment for the profession is about to commence and that professional organization may be looked to with confidence for the prevention of many ills and the advancement of all legitimate interests.

THE TUBERCULOSIS CONGRESS.

An enthusiastic audience of nearly 500 physicians, representing the entire United States, greeted Dr. William Osler as he opened the "National Association for the Study and Prevention of Tuberculosis" last Monday night at Atlantic City.

Those who have this movement near at heart, and the entire medical profession comes within this category, should feel encouraged by the assurance that they are finally to have a Congress representative of the entire profession; that is, capable of doing work that is greatly needed.

At this meeting the work of organization was practically completed and a Board of Directors of thirty members appointed, committees formed and working plans projected.

As outlined in the Constitution and By-laws, the objects of this Association shall be: (*a*) the study of tuberculosis in all its forms and relations; (*b*) the dissemination of knowledge concerning the causes, treatment, and prevention of tuberculosis; (*c*) the encouragement of the prevention and scientific treatment of tuberculosis.

In another place we give a list of the officers and committees of the new body, and predict for this movement a success far beyond the anticipations of those who spoke last Monday night, at this memorable occasion, not the least among whom was Dr. E. L. Trudeau, the captain and veteran fighter of the "white plague."

ISOLATION OF TYPHOID GERMS.

For years past it has been the favorite object of bacteriologists to provide an easy method for the identification of the typhoid bacillus in the stools, or other products of the body, and likewise in water. With these attempts are associated the records of many more or less successful maneuvers, such as those of Elsner, Piorkowski, and others, which have successively been tried, and abandoned, because lacking the prime element of practicability. Even the latest suggestion—the lactose-crystal-violet-litmus mixture of Drigalski and Conradi—has failed to meet with the favor due to a really good and feasible method.

Nothing daunted, however, the German bacteriologists have kept faithfully at the irksome research, and have actually, it would seem, brought the solution of the problem within the reach of the profession—as a body of practical physicians, interested not in methods for themselves, but for their clinical bearing and results.

The new light has come out of the idea of Prof. Rubner, of Berlin, to investigate the action of the various alkaloids on the growth of typhoid and of coli. This resulted in Roth's discovery (*Hyg. Rundschau,* May 15, 1903) that caffeine exercises a markedly deleterious action on the coli group of bacilli, whereas it does not interfere with the development of the typhoid group, including the so-called paratyphoid organisms. The discovery, which in itself is not practically applicable, marked the point of departure of a further series of investigations, both by Roth, and Ficker and Hoffmann, looking to its clinical adaptation. The results of their investigations, which are embodied in the third number of the *Archiv für Hygiene* for the current year, must be characterized as extremely encouraging, and a very notable advance on all previous attainments.

As a matter of fact, they have asserted that it is possible with the methods thus elaborated by them to detect typhoid bacilli when these are present in the ratio of 1 to 53,000 of other forms. The essence of the method the details of which must be sought elsewhere, consists in the preliminary multiplication of the typhoid germs by cultivation for thirteen hours in a bouillon medium containing a fixed percentage of caffeine and of crystal violet. From the growth thus obtained in a medium especially favorable to the typhoid germ, cultures are made according to the method of Drigalski-Conradi, which allows of

their easy identification. Stools or water may be treated in this manner, and may be said, for practical purposes, to be typhoid-free, if they fail to react.

It is hardly necessary to dwell on the great importance of this advance in technic. It may be objected that the method is cumbrous and entails a delay of a day or more. These objections are valid, and certainly militate against the serviceability of the method as compared with that of the agglutination test, or of blood cultures as diagnostic criteria. On the other hand, it is undoubtedly true that the method is superior to the Widal, inasmuch as it gives positive results much earlier in the disease. Finally, the conditions which obtain in private practice are certainly far more favorable to bacteriological examination of the feces than of the blood—a fact which lends the new method an advantage which is none the less real for being purely accidental.

ECHOES AND NEWS.

NEW YORK.

Addition to the University and Bellevue Medical College.—In view of the large classes at the University and Bellevue Hospital Medical College, and the prospect for a very large entering class in the fall, the Council of New York University, at a meeting last Tuesday, determined to purchase land adjoining the new college building, on First Avenue, between Twenty-fifth and Twenty-sixth streets, and to proceed at once with the erection of a six-story fireproof building for the clinics and laboratories of the Medical College. The building will harmonize in general style with the building erected for the Medical College, on the corner of Twenty-sixth Street and First Avenue, in 1898, and will be of light brick with trimmings of Indiana limestone, a large part of the front being merely a framework of iron and glass in order to give the greatest possible amount of light for laboratory work. On the rear the building will adjoin the Carnegie Laboratory, which belongs to the University, and is used also for laboratory work. The first floor of the building will be given up to the free dispensary of the college, which is at present treating more cases daily than any other dispensary in the city, with one exception, the total number during the past year reaching 150,000 cases.

Transferred to the Police Department.—Dr. E. T. Higgins, who for three years has been a coroner's physician, was transferred to-day by the Municipal Civil Service Commission to the Police Department. Dr. Higgins is a graduate of the Bellevue Medical College. He has served as surgeon and physician at Bellevue, Harlem, and City Hospitals.

Changes in University and Bellevue Medical Colleges.—A plan presented by the medical faculty for an elective fifth year course for medical students, was approved at the meeting of the Council of the New York University. The following appointments were made: Phœbus A. Levene, M.D., Herter lecturer on pathological chemistry for session 1904-05; Stanley D. Curran, M.D., instructor in physical diagnosis; James H. Potter, M.D., instructor in physical diagnosis; W. Reid Blair, M.D., assistant in pathological histology; C. J. Anthony, M.D., assistant in physical diagnosis. Promotions in the corps of instructors were approved as follows: George B. Wallace, M.D., lecturer on pharmacology, to be assistant professor of pharmacology; Hermann A. Haubold, M.D., lecturer on clinical surgery, to be professor of surgery; Henry W. Wandless, M.D., to be chief of Clinic, Department of Ophthalmology; Robert J. Wilson, M.D., instructor in bacteriology, to be lecturer on bacteriology; William M. Ford, M.D., assistant to chair of surgery, to be instructor in surgery; Julius A. Becker, M.D., assistant demonstrator of anatomy, to be demonstrator of anatomy; Edward S. McSweeny, assistant demonstrator of anatomy, to be demonstrator of anatomy.

PHILADELPHIA.

Wills Hospital Clinics.—The Surgical Staff of Wills Hospital, Race Street, between Eighteenth and Nineteenth streets, Philadelphia, invites the delegates and members of the American Medical Association to attend a series of special clinics to be held at the hospital on Monday and Tuesday afternoons at two o'clock, June 13 and 14, immediately following the meeting of the Association in Atlantic City, N. J. On Monday afternoon, June 13, through the courtesy of the Board of City Trusts of Philadelphia, the privileges of the hospital have been granted to Prof. A. Maitland Ramsay, M.D., of Glasgow, Scotland, the official guest of the American Medical Association, who, under the guidance of Dr. Charles A. Oliver, will demonstrate and operate upon interesting cases occurring in the clinics of Drs. W. W. McClure, Oliver, Samuel D. Risley, S. Lewis Ziegler, and McCluney Radcliffe. In the evening, at 8.15 o'clock, a meeting of the Wills Hospital Ophthalmic Society will be held at the hospital, to which all ophthalmologists are invited. The subject for discussion will be "Enucleation and its Substitutes." Dr. George C. Harlan will preside. After the meeting an informal reception to Dr. Ramsay by the attending surgeons to the hospital will be held at the hospital. On Tuesday, June 14, Prof. Ramsay, under the guidance of Dr. Frank Fisher, will demonstrate and operate upon the interesting cases occurring in the clinics of Drs. Fisher, Conrad Berens, P. N. K. Schwenk, William Zentmayer, and William C. Posey. After the clinics, the assistant surgeons to the hospital will entertain Prof. Ramsay by a visit to Willow Grove Park for supper, music, and electric fountain display, returning to the city by eleven o'clock. Trolley cars for the park will leave the hospital door at five o'clock. All visiting ophthalmologists are more than welcome to join in the party.

Red Bank Sanitarium.—The twenty-eighth annual season of this outing place for poor children was opened Saturday, June 4. Addresses were made by a number of the officers of the association, and 2,000 children were entertained at the grove.

Dr. Hutchinson on Hospital Staff.—Dr. James P. Hutchinson has been elected a member of the surgical staff of the Pennsylvania Hospital to fill the vacancy made by the death of Dr. W. Barton Hopkins. Dr. Hutchinson, whose father was a well-known member of the hospital staff, had for some time been connected with the dispensary of the hospital.

American Climatological Association.—The following were elected officers of this society at the last annual meeting, held in Philadelphia, June 2 to 4, 1904: President, Dr. W. F. R. Phillips, Weather Bureau, Washington, D. C.; First Vice-President, Dr. S. G.

Bonney, Denver, Col.; Second Vice-President, Dr. S. D. Risley, Philadelphia, Pa.; Secretary and Treasurer, Dr. Guy Hinsdale, Hot Springs, Va.; Member of the Council, Dr. J. C. Wilson, Philadelphia; Member of the Executive Committee of the Congress of American Physicians and Surgeons, Dr. F. I. Knight, Boston, Mass.; Dr. R. G. Curtin, Philadelphia, alternate.

Finsen Laboratory to be Erected.—The University Hospital is to have a Finsen light apparatus in working order by the end of the year. An appropriation of $25,000 by the State will permit of the installation of the plant which will be placed in an additional story to the Agnew pavilion of the hospital.

CHICAGO.

Hydrophobia.—Director J. F. Biehn, of the City Municipal Laboratory, recently sent out a warning of danger of a hydrophobia epidemic. Muzzling all dogs that appear in public is the remedy advocated by him. The Chief of Police has issued orders for the muzzling of dogs. Dr. Biehn has just completed analyses of the bodies of three dogs, and has found that all had hydrophobia.

Causes of Mortality in War.—In a recent editorial in the Chicago *Tribune*, the causes of mortality in war were discussed, and among other things the editorial states that, of all wounds treated by medical officers of the union armies in the Civil War about four-tenths of 1 per cent., or 922 out of 240,712, were saber or bayonet wounds. In the Crimean war the English and French had 2½ per cent. of such wounds; in the Schleswig-Holstein war about 3 per cent., while in the Franco-Prussian war the records show that the Germans received less than one-third of 1 per cent. A striking commentary this upon the advance of modern military science, showing that with the general adoption of long range firearms the saber and bayonet are rapidly falling into disuse, and the time is coming, if it has not already arrived, when those old and honored weapons will become obsolete. But it is not the bullet or the artillery fire which strikes down the largest numbers of men. It is disease. In the Civil War one man out of every 6.7 was wounded in action; one of every 38 died of his wounds; one of every 42.7 was killed in action. Of the total mortality among colored soldiers 90 per cent. was from disease. Of the total mortality among the white volunteers, 70 per cent. was owing to disease; among the white regulars, 60 per cent.

Catholic Charities.—According to the will of the late Thomas Brennan, member of the Board of Education, he bequeathed $1,000 each to St. Joseph's Hospital, St. Elizabeth's Hospital, Mercy Hospital and Alexian Brothers' Hospital.

Prosecution of Hanish.—The State Board of Health has prosecuted Ottoman Hanish, charged with violating the medical practice act, by the use of "torture needles and lotus oil injections." A warrant has also been secured by the State Board of Health for the arrest of "Dr." August van Bysterveldt, who is charged with practising medicine without a license.

Smallpox.—The Department of Health directs attention to the fact that of the 80 cases discovered in Chicago since the first of the year, the most searching examination has failed to find a single one who had been properly or recently vaccinated.

Joint Meeting of the International Association of Railway Surgeons and the American Academy of Railway Surgeons.—A joint meeting of these two societies was held in Chicago, June 1, 2 and 3. The convention met in the Assembly Hall of Northwestern University. During the first day the sessions were presided over by Dr. James H. Ford, of Indianapolis, President of the International Association of Railway Surgeons, and the sessions of the second and third days by Dr. S. C. Plummer, President of the American Academy of Railway Surgeons. An Address of Welcome was delivered by Dr. Wm. A. Evans, of Chicago, which was responded to by Dr. George Ross, of Richmond, Va.

President Ford discussed the use and abuse of the railway surgeon in his Presidential Address; and President Plummer selected as the subject of his Address, "Following and Assisting Nature." Eighteen interesting papers were contributed by as many members and received appropriate discussions.

The following resoluton was introduced:

Resolved, That at the close of the present session, the International Association of Railway Surgeons dissolve its present organization for the purpose of organizing the American Association of Railway Surgeons, provided that a union be made with the American Academy of Railway Surgeons at the meeting set for that purpose.

Resolved, Further, That the Executive Board of this Association be authorized to join with the Executive Board of the American Academy of Railway Surgeons and organize the American Association of Railway Surgeons.

The resolutions were unanimously adopted.

The two Associations having dissolved, to become amalgamated into one Association, known as the American Academy of Railway Surgeons, the first order was the nomination of a temporary Chairman. On motion of Dr. Hollowbush, of Rock Island, Ill., Dr. D. S. Fairchild was elected temporary chairman. Dr. Louis J. Mitchell was elected Temporary Secretary.

Dr. A. I. Bouffleur, of Chicago, presented the report of a joint committee on Constitution and By-Laws, for governing the new organization, and on motion this report was accepted and adopted as read.

The following are the officers of the new organization, the American Academy of Railway Surgeons: President, Dr. John E. Owens, Chicago; Vice-Presidents, Dr. R. W. Corwin, Pueblo, Col.; Dr. G. D. Ladd, Milwaukee, Wis., and Dr. H. C. Fairbrother, East St. Louis, Ill.; Treasurer, Dr. T. B. Lacey, of Council Bluffs, Iowa; Secretary, Dr. H. B. Jennings, of Council Bluffs, Iowa; Editor, Dr. Louis J. Mitchell, Chicago; Executive Board: Dr. D. S. Fairchild, Des Moines, Iowa, and Dr. A. I. Bouffleur, Chicago, three-year term; Dr. S. C. Plummer, Chicago, and Dr. A. L. Wright, of Carroll, Iowa, two-year term; and Dr. W. S. Hoy, Wellston, Ohio, and Dr. J. R. Hollowbush, Rock Island, Ill., one-year term.

There was considerable discussion relative to the time for holding the next annual meeting, but this matter was left entirely to the Executive Board. It would seem from the suggestions made by different members that the meeting will be held next year, some time in the fall.

GENERAL.

List of Directors of Tuberculosis Association.—*Massachusetts*—E. O. Otis and V. Y. Bowditch. *Connecticut*—J. P. C. Foster. *New York*—S. A. Knopf, H. M. Biggs, E. L. Trudeau, and E. T. Devine. *Pennsylvania*—L. F. Flick, M. P. Ravenel, J. M. Anders, and J. S. Pearson. *New Jersey*—R. Hoffman. *Maryland*—W. H. Welch, William Osler, E. Jacobs, and J. S. Fulton. *District of Columbia*—G. M. Sternberg. *North Carolina*

—C. L. Minor. *Colorado*—F. E. Solly. *Illinois*—E. Klebs and R. H. Babcock. *Minnesota*—H. M. Bracken. *Missouri*—Wm. Porter. *Indiana*—J. N. Hurty. *Michigan*—V. C. Vaughan. *Ohio*—C. O. Probst. *California*—N. Bridge. *Texas*—M. M. Smith. *Marine Hospital*—General Walter Wyman. *Army*—Surgeon Bushnell, Fort Bayard. Others may be appointed by the present Board to make representation more complete.

Officers of National Tuberculosis Association.—President, Dr. E. L. Trudeau; Vice Presidents, Drs. William Osler, Hermann M. Biggs; Executive Committee, Drs. J. N. Hurty, E. O. Otis, E. Klebs, M. P. Ravenel, and Mr. E. T. Devine. Dr. Osler was made chairman of a committee of five to represent this Association at the Paris International Convention.

Constitution and By-laws of the National Association on Tuberculosis.—The Committee, appointed in Philadelphia on March 28, for the purpose of organizing a new Society for the Study of Tuberculosis, met at the house of Dr. Hermann M. Biggs in New York on April 22, and proposed the following Constitution and By-Laws to be submitted to those interested especially in the subject at a meeting in Atlantic City on June 6, 1904:

CONSTITUTION. *Article I.—Name.*—The name of this Society shall be The National Association for the Study and Prevention of Tuberculosis.

Article II.—Objects.—The objects of the Association shall be: (*a*) the study of tuberculosis in all its forms and relations; (*b*) the dissemination of knowledge concerning the causes, treatment, and prevention of tuberculosis; (*c*) the encouragement of the prevention and scientific treatment of tuberculosis.

Article III.—Meetings.—The meetings shall be held at such times and in such places as may be directed under the By-Laws.

Article IV.—Incorporators.[1]—The names and residences of the Incorporators are:

BY-LAWS. *Article I.—Membership.*—This Association shall consist of three classes of members: (*a*) Members; (*b*) Life Members; (*c*) Honorary Members. (*a*) Members: those persons who have participated in the organization of the Association at the meeting in Philadelphia on March 28, 1904, and such persons as shall from time to time be elected by the Board of Directors. The dues of members shall be $5 a year; (*b*) Life Members: Members may become life members upon the payment of $200; (*c*) Honorary Members: Persons distinguished for original researches relating to tuberculosis, or eminent as sanitarians, or as philanthropists who have given material aid in the Study and Prevention of Tuberculosis may be elected Honorary Members.

Article II.—Election of Board of Directors.—The Association shall at its first meeting elect a Board of twenty-five Directors, divided into five groups of five each, to serve one, two, three, four and five years, the duration of office to be determined by lot; thereafter, retiring Directors who have served a full term of five years shall not be eligible for re-election the year of retirement, provided, however, that this restriction shall not apply to the secretary or treasurer. At succeeding annual meetings five Directors shall be elected for terms of five years, or in case of vacancies in any of the groups for the unexpired terms.

Article III.—Election of Officers.—The Board of Directors shall annually elect from its own number a President, two Vice Presidents, a Secretary and a Treasurer, who shall be the officers of the Association as well as of the Board.

[1] It was voted, if feasible, that the Association be incorporated by an Act of Congress, and Dr. Sternberg and Dr. E. Jacobs were named a Committee to consider the best manner of carrying out this motion.

Article IV.—Committees.—Section 1. The Board of Directors shall appoint an Executive Committee of seven directors, of which the president and secretary shall be members ex-officio, to which shall be entrusted all the executive work of the Association. *Sec.* 2. The Board of Directors is empowered to appoint representatives on the International Committee on Tuberculosis; it shall also from time to time appoint such committees as may be necessary for scientific and educational work, and for the holding of meetings and congresses. *Sec.* 3. The Board of Directors shall make its own rules; the government of the Association, the planning of work, the arrangement for meetings and congresses, and all other matters appertaining to legislation and direction shall be in its hands; committees shall have the power to execute only what is directed by the Board.

Article V.—Quorum.—Seven Directors shall constitute a quorum of the Board of Directors.

Article VI.—Meetings.—There shall be at least one stated annual meeting of the Association at a time and place to be fixed by the Board of Directors. Other meetings of the Association may be called by the Board at such times as it shall deem proper. The Executive Committee shall hold stated and other meetings as may be directed by the rules of the Board of Directors.

Article VII.—Moneys.—The moneys received from membership dues and from all other sources shall be used for defraying the expenses of the Association, and for furthering its objects under the direction of the Board of Directors.

Article VIII.—Amendment of By-Laws.—The By-laws may be amended by the Board of Directors; for amendment a two-thirds vote of the entire Board shall be necessary. No amendment shall be adopted within thirty days of its proposal or without at least twenty days' notice of the meeting at which it is to be voted upon, which notice shall set forth the amendment in full.

American Dermatological Association.—At the twenty-eighth annual meeting of the American Dermatological Association, which was held at the International Hotel, Niagara Falls, on June 2 and 3, 1904, the following officers were elected for the ensuing year: President, Dr. William T. Corlett, of Cleveland, Ohio; Vice-President, Dr. Frank H. Montgomery, of Chicago; Secretary and Treasurer, Dr. Charles J. White, of Boston; Member of Council, Dr. John A. Fordyce, of New York. It was decided to hold the next meeting of the Association in New York City, on December 28, 29 and 30, 1905.

Patent Medicines and Postal Department.—Postmaster-General Payne recently made public the attitude assumed by his Department toward patent medicine advertisements in the mails. A large number of complaints having been received by the First Assistant Postmaster-General protesting vigorously against the United States mails being used for the purpose of circulating newspapers and other literature containing advertisements of alleged cures for loss of manhood, vitality, etc., the Acting Postmaster-General transmitted a number of these advertisements to the Assistant Attorney-General for the Post Office Department, with the request for an opinion as to whether or not their transmittal through the mails constituted a violation of law. Mr. Robb, the then Assistant Attorney-General for the Post Office Department, rendered an opinion holding such advertisements a violation of what is known as the "obscene law." The only intention which has ever been entertained by the administrative officers is to suppress the advertisements which the law officer of the Department has held to be obscene. Of course, the Post Office Department has never had any intention of starting a crusade upon patent medicines or of establishing a censorship upon advertisements printed in newspapers. There has been no change in the policy

or practice of the Department. The facts simply are that certain abuses having been called to its attention it has acted thereon as required by law. In the regular course of business in the office of the Assistant Attorney-General a number of cases were presented in which the so-called cures for lost manhood and lost vitality were complained of as being worthless, as well as the literature of the company selling the article being obscene. Analysis of these so-called remedies developed the fact that in most instances the ingredients were simply starch and sugar. In a number of instances the pills and drugs contained ingredients injurious to the system and forbidden by law to be sold. It having thus appeared that these companies were defrauding the public by means of false and fraudulent representations made through the mails, the issuance of fraud orders was recommended to the Postmaster-General and accordingly issued by him. No action has been contemplated by the Department save in those cases of obscenity and fraud.

Anti-mosquito War.—About fifty men are at work ditching the Hackensack meadows under the direction of the Board of Health, which has begun a war on mosquitoes.

OBITUARY.

Dr. Matthew Leepere died on June, of dropsy at the home of George Eastment in Glen Cove, Long Island. He returned recently from the Philippine Islands. He was born in Arkansas in 1854. At the age of eighteen he became Indian interpreter for the United States Government and three years later was made a commissioned officer of the Fourth United States Cavalry. For ten years he saw active service in the West and on several occasions received honorable mention for bravery in battles with the Indians. At the expiration of the ten years he retired from the army and took up the study of medicine. He subsequently received diplomas from three medical colleges. He made a specialty of throat and ear diseases. He went to Chicago in 1882 and remained there until the Spanish War broke out, when he enlisted as a volunteer surgeon. He remained in the army until the close of the war in the Philippines. For the last year and a half he had been president of the Board of Health of the island of Mindoro. He was enthusiastic over the Philippines, and believed there were great possibilities for the islands. He was taken sick on Jan. 1, and as his condition did not improve he decided to return home.

Dr. George Washington Brooks died in this city June 3, at the age of eighty-seven years. He retired from active practice eight years ago and spent his time since then in country resorts and partly in sanitariums, as he suffered four strokes of apoplexy, the last of which proved fatal. Born in Portland, Me., Dr. Brooks came of a distinguished family. His brothers, James and Erastus, were the editors of the old *New York Express*. Mrs. Brooks, who was Miss Jane Roberts, of Utica, and one son, Dr. George Frederick Brooks, survive him.

Dr. Anna E. Park, whose charitable work of twenty-seven years caused the poor of the west side to know her as "The Good Doctor," died of pneumonia on May 30, at her home, 367 West Twenty-third street, New York. Her illness was contracted five days previously, while she was attending a poor patient. The doctor was born in Connecticut seventy-two years ago and was graduated as an eclectic in Philadelphia in 1860. During the war she served as a Red Cross nurse, and was a member of the National and New York State Eclectic Societies.

Dr. Frederick C. Schaefer, professor of clinical surgery in the Chicago Post-Graduate Medical School, surgeon-in-chief of St. Hedwig's Hospital, and gynecologist to St. Elizabeth's Hospital, died suddenly June 3, at his home in Chicago, from acute gastritis. He was born in Galena, Ill., in 1849, and came to Chicago in the early seventies. He received his professional training in the Chicago Medical College. After being graduated, he became professor of anatomy. When the institution was merged with Northwestern University, Dr. Schaefer continued as a member of the Faculty. At the time of his death he was also consulting surgeon to the Mary Thompson Hospital for Women and Children. He was a frequent contributor to medical journals. He was also a member of the American Medical Association, of the State and local medical societies. He leaves a wife, one son, and three daughters.

SOCIETY PROCEEDINGS.

THE AMERICAN MEDICAL ASSOCIATION.

Fifty-fifth Annual Meeting, held at Atlantic City, N. J., June 7 to 10, 1904.

General Session, June 7, 1904.

At the first General Session the annual meeting of the American Medical Association was formally opened by prayer by the Rt. Rev. John Scarborough, Bishop of Trenton, of the Protestant Episcopal Church. After addresses of welcome to the Association by State officials of New Jersey and of the Mayor of Atlantic City, and the response by the First Vice President of the Association, Dr. G. C. Savage, of Nashville, Tenn., the committee of arrangements announced the very full program of social events which had been prepared.

The important business of this first General Session was the introduction of the subject of the Dr. Walter Reed Memorial and the beginning of the subscriptions to it with an enthusiasm that would seem to promise a speedy realization of the amount originally proposed for the memorial and with an inspiration that would seem to show the possibility of exceeding first intentions.

Worthiness of the Object.—Dr. William H. Welch, of Baltimore, said that no worthier object could possibly be proposed for the consideration of Amercian medical men. Dr. Walter Reed was entirely a product of American training methods in medicine. His success may be said to be due to the typical American spirit of enterprising invention put at the service of medicine. What he accomplished is one of the greatest advances in medicine. The only thing it can possibly be compared to is the conquest of smallpox by vaccination. For his discovery of the mosquito doctrine of the distribution of yellow fever will lead to the total eradication of that disease eventually, as it has already completed what looked like the hopeless task of ridding Cuba completely of the affection which was supposed to be indigenous in the very soil, for it had been known to exist continuously for over a century.

National and Popular not Medical.—Dr. Welch said that the memorial to Dr. Reed should be worthy of this marvelous accomplishment. For this purpose it seems well to make appeal not only to the narrow circle of medical interests but to the business interests generally throughout the country. Boards of Trade and Commerce should be brought to see how much was accomplished by one man and would then realize the eminent suitability of giving him a proper memorial. To say nothing of the number of lives that have already been saved and will be in the future and the immense amount of human suffering spared, there is the further consideration, so unworthy to be placed beside the humanitarian motives, yet not without its weight, that economic advantages of great moment will flow from

it. It has been calculated that the last serious epidemic of yellow fever—that of 1878—cost this country several hundred millions of dollars. Now we know that through Dr. Reed's work this useless expense will never be called for again.

Honor to Medical Men.—Dr. Theodore Diller, of Pittsburg, Pa., said that all classes of public benefactors seem to receive recognition before the great medical discoverers. The commanders and other heroes of our wars, the Judges and literary men, all receive their memorials at the hands of the public, but the doctor, as is so often the case in private life, is forgotten. In England, however, Jenner, the discoverer of vaccination, has been worthily honored by English professional brethren; it seems but right that for as worthy an object American physicians should be ready to unite. It has taken long to raise the monument to Rush, but at last it is accomplished. May the greater union among the medical profession in this country now be typified by the better success of the monument movement for Dr. Reed.

Enthusiastic Subscriptions.—Dr. W. W. Keen, of Philadelphia, then announced that the committee was ready to receive subscriptions and gave the names of a number of ex-Presidents of the American Medical Association who had expressed their willingness to contribute $100 each to the fund. After this list other names were announced and from all over the large hall subscriptions poured in. Nearly $7,000 was subscribed within a quarter of an hour. The California State Medical Society subscribed $500. The officers of the United States Marine Hospital Service, on duty in Washington, many of whom had been personally acquainted with Dr. Reed, and some intimately associated with him in his work on yellow fever, subscribed $250. Subscriptions of $100 each were received from the following: Dr. C. A. L. Reed, of Cincinnati, John A. Wyeth, of New York, Dr. W. W. Keen, of Philadelphia, Pa., H. O. Marcy, of Boston, Mass., Surgeon-General Sternberg, Surgeon-General Wyman, of Marine Hospital Service, Dr. Jos. D. Bryant, of New York, Dr. E. G. Janeway, of New York, Dr. Frederick C. Shattuck, of Boston, Dr. Arthur T. Cabot, of Boston, Dr. Joseph Matthews, of Louisville, Dr. H. C. McCormack, of Kentucky, Dr. Wm. H. Welch, of Baltimore, Dr. A. A. Smith, of New York, Dr. William Osler, Baltimore, Dr. A. H. Smith, of New York, Dr. Victor C. Vaughan, of Ann Arbor, Mich., Dr. H. A. Kelly, of Baltimore, Dr. Jno. H. Musser, of Philadelphia, Dr. S. Weir Mitchell, of Philadelphia, Dr. Wm. J. Mayo, of Rochester, Minn., Dr. Francis Kinnicutt, of New York, Dr. J. B. Murphy, of Chicago, Dr. H. O. Walker, of Detroit, Dr. Palmer Dudley, of New York, Dr. J. C. Wilson, of Philadelphia, Dr. Floyd McRae, of Atlanta, Ga., Dr. Chas. G. Stockton, of Buffalo, N. Y., Dr. Abraham Jacobi, of New York, Dr. Robert F. Weir, of New York, Dr. George Ben Johnson, of Richmond, Va., Dr. Jos. Peterkin, of Seattle, Wash., Dr. DeLancey Rochester, of Buffalo, N. Y., Dr. Barlow, of Los Angeles, Cal., Dr. Alvin Hubbell, of Buffalo, N. Y., Dr. Mackenzie, of Portland, Ore., Dr. A. MacLaren, of St. Paul, Dr. W. S. Halsted, of Baltimore, Dr. Kober, of Washington, D. C., Dr. C. J. McClintock, of Detroit, Mich., Dr. Rosa Wiss, of Meridian, Miss. After these a number of subscriptions of $50 were received. The committee expressed its intention of giving those interested in commerce with tropical ports an opportunity to subscribe, since none benefited more than they by Dr. Reed's discovery.

The session closed with the introduction of the new president, Dr. John M. Musser, by Dr. Billings, and the delivery of the President's Address which will be found on page 1105 of this week's issue of the MEDICAL NEWS.

SECTION ON MEDICINE.

FIRST DAY—JUNE 7TH.

The Adaptation of Pure Science to Medicine.—The scientific business of the Section on Medicine was opened by the address of the Chairman of the Section, Dr. Alexander Lambert, of New York, with the above subject. He reviewed some of the details of recent progress in medicine. Tetanus, for instance, has been demonstrated to spread along the nerves and so there has come the idea that instead of being injected directly into the circulation where it is so much diluted the antitoxin might be expected to do its work of neutralization more effectively if placed in a position to follow the same paths. Dr. Lambert has seen two patients with tetanus treated by the direct injection of the antitoxin into the nerve bundles with successful results. As in both cases the severity of the initial symptoms seemed to make the prognosis very unfavorable, if not absolutely fatal, the new method of treatment will deserve to be followed with attention, so as to determine its absolute value.

Preventive Inoculations.—This subject, though followed with such hopeful anticipations at the beginning, because of the analogy with vaccination, has proved very disappointing. There are, however, some results that are encouraging. Preventive inoculations for typhoid fever seem to have been followed by some good results. Statistics apparently establish that fifty per cent. of those who are exposed to typhoid fever after inoculation and who would have, according to the chances of the conditions, taken the disease prove able to resist it. On the other hand fifty per cent. of those who take the disease after inoculation have it in very mild or even abortive form, and the mortality is much lower among the inoculated than among the rest of the population.

The Widal Test.—The agglutination reaction has proved of great diagnostic value when positive, but when negative nothing can be argued from the fact. The agglutinative power bears no relation to the severity of the disease nor does it tell anything as to resistive powers or as to the prognosis of the case. In severe cases it may be less marked than in those of mild type, and it may even decrease with the severity of the symptoms. During convalescence it may be more marked than at the height of the disease. Unfortunately, in certain cases what one pathologist will declare to be a positive reaction, another may consider as of negative significance, and some have even taken to use the expression, doubtful reaction, which is to be deprecated. The laboratory is often unable to make the diagnosis and this fact should be frankly stated, as otherwise there may be an increase of the suspicion of the pathologist by the clinician which unfortunately exists and which sometimes leads to specimens being submitted without the data that can help the pathologist and to which he has every right.

Lumbar Puncture.—This diagnostic aid has proved especially serviceable in the recent epidemic of cerebrospinal meningitis for the differentiation of that disease from the other forms of meningitis and has besides proved of some value from the standpoint of treatment. This method of diagnosis is the only one that can show with certainty the presence of sporadic cases of the disease when no epidemic is in progress.

Chemistry of the Urine.—In this there remains most to do. The presence of albumin and casts is helpful only in a general way. No direct connection exists, as Dr. Cabot has shown, between the urinary findings under present methods and the post-mortem observations. The difference between acute and chronic conditions can in general be recognized but scarcely more

than this. On the other hand, nothing definite as to prognosis can thus be determined. Uremia may supervene quite unexpectedly, even where the patient has been carefully watched. The real causation of uremia is not yet understood. Anuria may exist for some days and cause the death of the patient from failure of the kidneys to remove excrementitious material, yet no uremic symptoms manifest themselves. The total solids in the urine seem, however, to be a better indication of the possibility of uremia than the albumin. In this matter much remains to be done, and much that has been apparently accomplished has had to be undone when brought to the test of actual practical experience. Eclampsia has usually been considered, until quite recently, to be a form of uremia incident to the pregnant state. Its occurrence, however, bears no relation to the presence of albumin and casts in the urine, for it has been known to develop when these were not noted and, on the other hand, some patients with considerable albumin and casts pass through pregnancy without a symptom of eclamptic character. Recent investigations seem to show that eclampsia is connected with a condition of the liver not unlike the pathological process which, in more advanced cases, is known as acute yellow atrophy of the liver. Some liver degeneration seems a not unusual accompaniment of pathological pregnancies and even such conditions as hyperemesis—the pernicious vomiting of pregnancy—may be connected with liver change of some kind. These are the problems now before the medical profession for solution.

Pernicious Anemia and the Stomach.—Dr. Charles G. Stockton, of Buffalo, presented an analysis of 24 cases of pernicious anemia. In the majority of the patients there were some digestive disturbances. At times not gastric alone but also intestinal. Some of the patients had anorexia as a prominent symptom but most of them had reasonably good appetite. Most of the cases of true pernicious anemia present the symptom achylia gastrica; that is, there is no formation of chyle in the stomach and no gastric digestion. There is no hydrochloric acid in these cases and, in the range of Dr. Stockton's experience, once HCl has disappeared it does not make its appearance again. The appetite and general condition may improve in correspondence with an improvement of the blood condition but gastric digestion remains as before.

Achylia Gastrica.—In his studies of achylia gastrica, Dr. Stockton has not found that this is by any means necessarily connected with pernicious anemia. He has seen cases of it which have existed for many years without any tendency to the production of anemia of the pernicious variety, though when the symptom-complex is associated with dairrhea, then there is secondary anemia. When achylia gastrica exists alone, the motor sufficiency of the stomach is intact; and so long as the viscus is able to pass on the food which it contains, no difficulty is experienced. At times there seems to be even an increase of stomach motility. In pernicious anemia an increase of the stomach motility is sometimes noted, but, later, this is apt to become weaker, apparently as the result of the changes in the blood, not supplying sufficient nutrition to the stomach wall.

Cardiac Symptoms.—The most interesting feature of pernicious anemia is the slight amount of cardiac disease which exists in connection with the severest pathological conditions of the blood. Even hard workers do not complain much of their hearts and do not suffer discomfort in their hearts, or, except for a certain amount of dilatation, are there any physical signs. Hemic murmurs exist very often, but they are not as common as in chlorosis. They are to be found over the large vessels and in the systolic sound of the heart. They change very much with the varying conditions of the patient's blood and may even disappear during intermissions of the disease. Since Dr. Billings called attention to the fact that spinal symptoms are common in connection with pernicious anemia Dr. Stockton has found in six out of nine cases studied for this detail that they were present. There is usually an absence of any history of severe illness in the patient's past. As a rule the first symptom that is complained of is dyspnea and this is one of the commonest symptoms of pernicious anemia. Many cases of the disease are missed. Patients come with the story that they are suffering from cancer of the stomach or liver trouble, or heart disease, or locomotor ataxia. Most of these diagnoses have been confirmed by physicians who seem not to have suspected the existence of pernicious anemia, though a single examination of the blood would have revealed the presence of the disease.

Duration of the Disease.—One of Dr. Stockton's patients died in five years after a definite diagnosis of pernicious anemia could be made. One of them, on the other hand, lived only six months, but then it is not easy to determine how long the condition may have existed and may have been latent. Some other statistics of the disease are interesting. In 22 patients there was a lemon-yellow color of the skin. In only two was the characteristic yellowness absent. In some of the cases the patients had the look of being jaundiced and the diagnosis of their condition would have been difficult only for the blood examination. Very few patients suffering from the disease have a coated tongue. In 19 out of the 24 patients, there was a denuded tongue, the outer cells having died for lack of nutrition.

Hydrochloric Acid a Luxury.—Dr. Richard Cabot, of Boston, in discussing Dr. Stockton's paper said that in a careful study of 151 cases of pernicious anemia he had found hydrochloric acid absent in about five sixths of the cases. Most of these patients, however, had perfectly good digestion, in fact it was surprising how many of them were able to stand even forced feeding and yet have no stomach discomfort. As a result of his studies, Dr. Cabot came to the conclusion that hydrochloric acid is a luxury in digestion, but by no means a necessity. So long as there is no motor insufficiency of the stomach, patients have no inconvenience from their achylia gastrica. Dr. Cabot also has noticed that hydrochloric acid is absent during periods of improvement in pernicious anemia. The most surprising thing, in his experience, however, is the slight cardiac symptoms, even in the advanced stages of the disease when the clinician cannot help but know that the heart muscle is in a state of severe fatty degeneration.

Gastric Atrophy and Pernicious Anemia.—Dr. Max Einhorn, of New York, said that pernicious anemia is not due to gastric adynemia. There is no direct connection traceable either of cause or effect between these two conditions. There seems no doubt, however, that atrophy of the stomach wall does occur as a consequence of the poor blood that comes to it. Achylia gastrica, however, may exist with an excellent general condition and without any severe changes in the blood. Cases of it have been followed now for many years without any serious consequences being noted in other systems of the body.

Dr. Allen Jones, of Buffalo, said that it is a clinical fact that pernicious anemia is not caused by achylia gastrica. He has in his laboratory work seen much more achylia gastrica without pernicious anemia than with it.

Gastric Atrophy and Pernicious Anemia.—Dr. William Osler, of Baltimore, said that it was surprising how good the condition of patients may be who are suffering from pernicious anemia. They bear forced feed-

ing very well without any stomach distress, and the fatal issue is often surely not connected with any stomach lesion. On the other hand, stomach symptoms are a frequent accompaniment of pernicious anemia. The first symptom of the disease is often noticed in the stomach. There cannot help but be an impression that this organ is of importance in the production of pernicious anemia under certain circumstances. When very severe atrophy of the stomach exists, such as was described by Osler and Henry some years ago, then this would seem to be a cause of the blood condition. In this case described, the mucous membrane of the stomach had become cuticular. It had entirely lost the character of a secretory membrane. Dr. Osler said that he would be interested to know if observers of pernicious anemia found any connection between the disease and the septic condition of the mouth which had been described by certain English observers and reported as a cause of the disease. Dr. Osler himself has seen this spring so many cases of pernicious anemia as almost to constitute an epidemic of the disease. In all cases in recent years he has looked for oral sepsis, but has not found it in any notable proportion of cases and considers that it has little to do with the etiology of this type of anemia.

Diagnosis.—Dr. Osler does not consider that it is creditable to the diagnostic skill of physicians in this country that so many cases of pernicious anemia should be missed by ordinary physicians, leaving the recognition of the disease for the consultant. Laboratories are at hand now in nearly every part of the country and blood examinations can readily be obtained. There are surely enough symptoms in pernicious anemia, apart from the blood, to make at least a suspicion of its existence occur to the practitioner's mind. Too many physicians, however, are satisfied with general ideas, and the consequence is that cases of pernicious anemia masquerade as all sorts of affections.

Hydrochloric Acid Supplied.—Dr. J. N. Hall, of Colorado, said that in certain cases of pernicious anemia, in which arsenic failed to do good, he had tried the use of rather plentiful amounts of hydrochloric acid. The rationale of the administration of this is to make up for the absence of hydrochloric acid which is so commonly noted. In at least one recent case, in which everything else had failed, the patient became practically cured and has remained in good condition since. In one case where Fowler's solution failed to be of any service, Dr. Hall found subcutaneous injections of cacodylate of soda of excellent effect. The patient was a physician. The improvement took place several years ago and he has remained well ever since. Dr. Hall considers that in cases where the pernicious anemia may be suspected of being a secondary anemia due to the presence of intestinal parasites, the absence of eosinophile cells makes it very clear that the affection is not due to a parasite.

Large Doses of Hydrochloric Acid.—Dr. George Dock, of Ann Arbor, Mich., said that hydrochloric acid, fresh air, abundant diet, just as if one were treating the patient for tuberculosis, constitute, in his mind, the most effective regimen for pernicious anemia. Of course it is doubtful whether this accomplishes anything more than arsenic does, or whether the patients are really improved, for there are cases in which without any special therapeutic effort, pernicious anemia seems to get much better. The disease is very uncertain in these intervals of improvement. Dr. Dock considers that when hydrochloric acid is used, it should be administered in large doses. Forty-five to 60 minims should be taken well diluted after meals. When the drug is well borne, the patients improve under it. When it is not well borne, it is ineffective. Dr. Dock considered that the gastric digestion and its chemical tests should be controlled by thorough examination of the stools. It is hard, however, to determine the relations between the feces and the ingesta, and this is a problem that remains to be worked out.

Gastric Atrophy and Pernicious Anemia.—Dr. Stockton, in closing the discussion, said that he feels his own conclusion with regard to the absence of connection between the gastric condition and pernicious anemia to be wrong if Dr. Osler insists on the etiological relationship. With Dr. Einhorn, however, Dr. Stockton prefers to consider the gastric condition an effect rather than a cause. He doubts about the success of any therapeutic effort for pernicious anemia and has seen about as many cases improve without arsenic as with it. The disease is entirely too uncertain in its course to be made a subject for any definite statistics as to therapeutic results.

Perforation in Typhoid Fever.—Dr. Morris Manges, of New York, reported 19 cases of perforation in typhoid fever out of the total of over 200 cases observed at Mt. Sinai Hospital during the last two years. Sixteen of these patients were operated upon and five of them recovered. Three of the patients were not operated upon for lack of consent to do the operation, and one of the three recovered. In all of the 16 operations the diagnosis was confirmed at the operation. There was no doubt at all of the perforation in the other three cases, in two of which it was observed at autopsy, and in the third demonstrated by a subsequent fistula. Dr. Manges considers that the present treatment of the subject of perforation in typhoid fever, in text-books is old fashioned and not likely to help the general practitioner to make the diagnosis early enough to enable the surgeon to save life. What needs to be diagnosed is the perforation itself and not the subsequent peritonitis, which is almost sure to be the forerunner of a fatal termination, if it has become generalized.

Symptoms of Perforation.—The most prominent symptom is pain which occurs in practically all cases unless the patient is in a comatose condition. Rigidity is the next most important symptom. In 16 of the patients there was an intermittent tendency to rigidity in two. Distention of the abdomen, often considered a common symptom, was found in a little more than half the patients, while eight of them presented even a retraction of the abdominal walls. The movable dulness, said to occur in the flanks in perforated patients, is not a valuable diagnostic aid and occurs too late to be of service for surgical intervention. It would be much more important for hospital physicians to occupy themselves with the size of the liver rather than to waste time in finding out whether the spleen is enlarged or not. The liver dulness should be determined in the axillary line, as there it is less likely to be encroached upon by the gaseous distention of the colon.

Critical Symptoms.—The pulse fell in none of the patients and rose in 12. In seven patients only was leucocytosis present and only in one patient were symptoms of collapse noted. Twice the patient began to sweat profusely immediately after the perforation. No disturbance of blood pressure was noticed in any of the cases, though during the past winter especially careful observations were made with regard to this point. It must not be forgotten that the onset of symptoms is by no means necessarily coincident with the perforation. As Dr. Shattuck, of Boston, has shown, there may be slight attacks of pain which pass off perhaps more or less and then are followed by definite symptoms after some hours.

Pain the Pathognomonic Symptom.—In 14 of the 19 patients studied, pain was noted. This was paroxysmal at times, but by no means in all. It was so severe that even patients in coma cried out at times, in others it

was quite mild. It is constant in some cases and in others it disappears after a time. If the patient is anxious about the outcome in a mild case, the symptom may be concealed. In one instance, at the Mt. Sinai Hospital, two patients side by side suffered from perforation. As soon as the first occurred, he was removed to the operating room and accordingly when pain came to the neighboring patient he refused to say anything about it. It is not easy to understand the significance of the pain. In some cases there is hemorrhage associated with it. In others this is not the case. There is danger in the use of opium lest it should mask the symptoms.

Spontaneous Cure.—The fact that one of the three patients who refused operation recovered, shows the possibility of spontaneous cure, which has, however, been pointed out by other observers before, and under the best possible conditions, however, only 5 per cent. of the patients recover spontaneously after perforation. Even these recover, however, with the unpleasant accompaniment of a fecal fistula. Thus it would seem an operation is not only justified, but eminently indicated. There need be no fear of the effect of the anesthetic. In Dr. Manges' cases, the anesthesia had proved a stimulant, and general anesthesia had been found much better in its effect upon the patient than local anesthesia with the shock and worry of it all. In concluding his paper, Dr. Manges said that Dr. Wilson, of Philadelphia, in 1886 and Dr. Mikulicz had pronounced very definitely in favor of operation for perforation. Now, after a score of years, their words are the best possible advice that can be given.

False Conservatism.—Dr. Osler said that he heard Dr. Wilson pronounce, nearly twenty years ago, in favor of operation for perforation in typhoid fever. He must have been older then than he is now, for at once a revulsive feeling of conservatism came over him. Fortunately, however, he was able to overcome it, and the result has been for the benefit of many patients. The only way to recognize perforation is to watch for the symptoms, and any possible change in them.

Dr. Osler said that any change in the condition of a typhoid patient must be reported at once. To leave such things until the daily rounds or at the mercy of any routine is almost sure to be fatal. Within ten minutes the patient should be under the physician's eye and the surgeon should be asked to cooperate if everything is not right. House surgeons should be ready to operate in such emergencies at night or where there is delay in reaching the attending surgeon. The last perforation at Johns Hopkins Hospital was in a stalwart German seen in the ordinary rounds at 11 A.M. At 12 M. there was a sudden attack of pain; by 3 P.M. he was operated on. This apparently had no effect on the regular course of his typhoid fever.

Operation for Hemorrhage.—Dr. J. C. Wilson, of Philadelphia, said that he hoped the time would come when operation would be done for threateningly fatal hemorrhage in typhoid just as it is now for perforation. Hemorrhage and perforation are not coincident in Dr. Wilson's experience, though it is not uncommon to have perforation follow severe hemorrhage. Pain as a sign of perforation is not absolutely to be depended on. Some cases of typhoid present severe pain sudden in onset, the effects of which pass off in a few hours without any sign of harmful result. The differentiation of these cases must give the medical man time to pause before determining upon surgical intervention without some other sign to confirm it.

Difficulty of Locating Bleeding Point.—Dr. Morris Manges, in closing the discussion, said that he hoped Dr. Wilson's recommendation as to hemorrhage would accomplish as much as had his announcement of the policy to be followed after perforation. He would have to show the profession how to locate the bleeding point, however, for, as it is now with all the freedom of examination furnished by the opportunities of the dissecting table, it is often difficult to find the source of the hemorrhage.

Uterine Hemorrhage in Typhoid.—Dr. William E. Darnell, of Atlantic City, reported a case in which the fatal issue in an anomalous illness, during the course of which there had been but moderate fever, was brought about by severe uterine hemorrhage. No source for this could be found in the genital tract. Examination of the colon, however, showed the typically enlarged and ulcerous Peyer's patches, characteristic of typhoid. The question was then raised whether this might not be the causative agent in the hemorrhage.

Increase of Pneumonia.—Dr. Edward F. Wells, of Chicago, showed from statistics the great increase of pneumonia during the past century. About eight per cent. of all the deaths are now due to this affection. Far from decreasing, with our knowledge of infectious disease, it has multiplied in spite of knowledge. During the last decade of the nineteenth century it was probably three times as frequent as during the earlier decades. This is due partly to the greater virulence of the pneumococcus, but partly also to the more frequent opportunities for infection presented by great city life. Closer contact causes its spread, for it is undoubtedly a contagious disease in the strictest sense of the term. As the result of passing through a number of susceptible people the pneumococcus gains in virulence and thus is able to overcome the more or less immunity to it presented by many individuals. Dr. Wells has succeeded in demonstrating the pneumococcus to be present in the throat and nasal secretions of over forty-five per cent. of normal, healthy individuals out of over 100 examined. The organism plainly is taken up from the air and lodges here. Under the effect of cold the mucous membrane becomes paretic and so is not able to throw off the microbe. When it finds its way into the pulmonary alveoli, conditions become favorable for its growth. In a certain number of cases the pneumococci find an entrance into the lungs through the circulation. Hence the necessity for caring for conditions of tonsillitis as well as all catarrhal conditions of the nose and throat, which favor the lodgment of the germs. Honeycombed tonsils seem to present an avenue of entrance often available for the repeated attacks of pneumonia seen in some persons. Such mechanical and pathological conditions are much more important factors in the etiological predisposition of the disease than perhaps even the susceptibility of which so much has been made. Besides the virulence of pneumonia, Dr. Wells is confident that there is a definite increase of mortality from the disease, according to the number of cases. This also is due to the greater virulence acquired by the pneumococcus.

Prophylaxis.—Dr. Wells considers that the only way to lessen the present mortality and prevent even further increase of the disease is to avoid as far as possible the distribution of the secretion of patients suffering from the disease. The sputum and nasal secretions and all articles that become soiled with them must be thoroughly disinfected. This includes especially the fingers and the bedding of patients and requires the thorough disinfection of rooms in which such patients have been. The most important individual measure of prophylaxis is undoubtedly the avoidance of respiratory disease, for this predisposes the pulmonary mucous membrane to allow the lodgment of the pneumococcus. Dr. Wells considers that the blood pressure is an important element in pneumonia as regards both prognosis and course of the case. At the beginning there is always

a period of lowered blood pressure. Later this is not so common. This lowered blood pressure seems to Dr. Wells to be probably due or at least to be one of the elements of the physiological process by which leucocytes escape from the blood-making areas. It is now generally conceded that leucocytosis in pneumonia makes a distinctly favorable prognosis. Accordingly it would seem that this should be encouraged. In Dr. Wells' hands, the most efficient agent for the encouragement of leucocytosis with lowered blood pressure has been veratrum viride. This should be used in sufficient quantities to lower the pulse rate. If at the beginning of the case there is high blood pressure, bloodletting is of very great service.

Venesection in Pneumonia.—Dr. Jenkins, of Iowa, said that undoubtedly something of the frequency of pneumonia in recent years is due to the epidemic of influenza which has made many individuals more susceptible to respiratory disease than before. The treatment of pneumonia on the expectant plan has certainly not been satisfactory. The average mortality is higher than before. It would seem then that bloodletting should be reverted to once more, and that where the fever constitutes an important complication, this should be reduced by means of cold water.

Symptoms Not to be Treated.—Dr. De Lancey Rochester, of Buffalo, N. Y., said that it is an unfortunate thing to suggest treatment for symptoms, since it is the individual and the special form of pneumonia with its complications that must be treated. Poisons are already in the system, and it is important not to add to these by giving remedies that are also poisonous. Early bleeding should be resorted to in sthenic cases. Venesection is also of importance later on in the disease if there should be dilatation of the heart from weakness. Dr. Rochester does not believe in the use of opium in pneumonia, since it locks up the secretion, thus adding to the toxemia which is always a source of danger, besides it masks the symptoms, preventing the physician from realizing the danger the patient is in. One important method of elimination of toxins is sweating. This should not be brought about by the introduction of diaphoretic drugs, which are usually of depressant not to say poisonous nature. Hot foot-baths, properly given, without any disturbance of the patient, that is, while lying in bed, and hot air-baths, will be found quite efficient for this purpose, and will often be of distinct service in toxemic cases. Late pulmonary edema in this disease seems to be due to failure of the right auricle, and the first sign of it should be an indication for venesection.

Series of Pneumonia Cases.—Dr. Joseph Sailer, of Philadelphia, reported a series of 60 cases of croupous pneumonia, studied with special reference to certain physicial signs and to the laboratory diagnosis with discussion of the value of leucocytosis and the quantity of estimation of the chlorides in the urine. Dr. Sailer noted particularly the frequency of pneumonia of the upper lobes in fatal cases. With regard to leucocytosis the conclusion reached was different to the general impression with regard to this phenomenon. Three of the patients that recovered had less than 10,000 leucocytes, ten had 10,000 to 20,000, five 20,000 to 30,000, five 30,000 to 40,000, and three over 40,000. On the other hand, four of the patients who died showed a leucocytosis of 20,000 to 30,000, one had over 30,000, and one of the thirty patients had nearly 50,000 leucocytes during the course of the disease. No definite conclusion then can be reached with regard to the significance of leucocytosis. Where leucocytosis is absent, fatalities ensue more frequently, but a high leucocyte count does not give a favorable prognosis. Any method of treatment, therefore, that would be founded on this phenomena would not likely be of great advantage.

Urinary Chlorides.—The chlorides in the urine are not of prognostic value. When in the early course of the case the chlorides are absent, patients usually die, but they may be present and yet fatalities ensue. The presence of chlorides in pneumonia is very different from that of typhoid. They are always reduced in pneumonia while usually not disturbed at all in typhoid. This point can be used as a diagnostic factor in obscure cases of pneumonia. In this way a central pneumonia which gave no physical signs at any time, was recognized, and the diagnosis confirmed at autopsy. Icterus was noted three times in 60 cases, but seems to have no special connection with the pneumonia itself. Cyanosis was noted in severe form twice and was relieved once by venesection. Skoda's indeterminate breathing was noted in certain cases. It seems of diagnostic value.

Antipneumococcus Serum.—In ten cases antipneumococcus serum is employed and the results obtained are distinctly favorable. Four of the patients which recovered were so unfavorable in their prognosis that their recovery seemed marvelous. Three deaths took place. These were, however, in patients who would surely not have survived any form of treatment. One of them recovered from the pneumonia, but died shortly after from rapid tuberculosis. The results can be said to be fairly satisfactory, but further observations must be made to test the value of the serum.

Pulmonary Edema.—Dr. Babcock, of Chicago, said that the development of pulmonary edema in pneumonia patients after the crisis has passed, points to the failure of the right heart. Bacelli's suggestion, however, that the pneumococci may find lodgment in the walls of the alveoli must not be forgotten, for this seems to be the cause of the edematous condition. The blood pressure in pneumonia is low from the beginning, and this would seem to contraindicate the use of veratrum viride. The theory that lowered blood pressure helps leucocytosis is after all as yet unsubstantiated, and, besides, the value of leucocytosis itself as a feature of pneumonia is not determined. Stimulation seems more important than depression. Dr. Fränkel's method of employing digitalis hypodermically, beginning on the third day whenever there is no arterial sclerosis, must not be forgotten.

Mortality of Pneumonia.—Dr. R. C. Cabot, of Boston, said that the records of pneumonia which we have so far do not justify the thought that the disease is not more frequent than it used to be. This question must be studied more carefully. Certainly the records of the Boston City Hospital will not be found to substantiate the claims of exaggerated mortality now so common.

Dr. Cohen, of Philadelphia, said that the most important element in pneumonia treatment is to individualize therapeutic effort. In some cases venesection is of use to reduce the toxemia at the beginning. In others, it is of value to relieve the overloaded right heart. In neither of these cases does it seem advisable to inject saline solution afterward. High temperatures, in Dr. Cohen's experience, seem rather favorable than otherwise. The temperature seems to be an index of the vital reaction, and the patient with 104° F. is much more likely to get better than those running lower temperatures. Veratrum viride undoubtedly does good in many cases of pneumonia, but it is not because it is a heart depressant.

Shock of Pneumonia.—Dr. Wells, in closing the discussion, said that at first there is undoubtedly a reduction of arterial tension in pneumonia. This seems to be a protective reaction on nature's part. It is desirable to maintain it as far as possible. Veratrum viride by accomplishing this protects the patient from the shock of the disease. Dr. Wells does not want to

be misunderstood with regard to the use of opium. When patients are very restless and tossing, opium is employed to quiet them. This prevents them from being harmed by their restlessness. When the blood pressure in pneumonia goes up, the prognosis is decidedly unfavorable.

Serum Intravenously.—Dr. Sailer, in closing the discussion, said that undoubtedly serum may be obtained that will be efficient in pneumonia. His idea is that perhaps it should be injected intravenously so as to reach the lungs less diluted than with the present method of injecting simply under the skin. He expects then to make use of this method in some further cases.

Second Day—June 8th.

symposium on arteriosclerosis.

Pathology of Arteriosclerosis.—Dr. William H. Welch, of Baltimore, dwelt on the fact that enormous atheroma of arteries may be present without any heart disease or even hypertrophy and without any rise of arterial tension. At the same time, there may be none of the usual symptoms of sclerosis. The question is whether the rise in blood pressure precedes arterial sclerosis and causes it or whether it is the consequence of elasticity in the arteries. Traube and Pepper insisted that there was some element present in the circulation which first causes the rise in blood pressure. For the determination of this, it is positively necessary to eliminate all cases of Bright's disease in which, of course, high pressure is present as the result of faulty elimination of the used up material. Dr. Welch suggested that the theory formulated by the Leipzig school of pathology which considers that the circulation in the abdominal viscera is the first and the most important question in the production of arteriosclerosis. Sclerotic changes in the kidney and liver are particularly important in this respect. When, however, the course of the arteries does not show any thickening, the mouths of the vessels in the abdomen may show distinct constriction. This has been to a very limited degree the subject of detailed observation; studies in arteriosclerosis are incomplete and especially do not take in these vessels.

Syphilitic Aortitis.—Syphilis is, in Dr. Welch's opinion, a very prominent cause of changes in the aorta and of atheromatous conditions in other arteries throughout the body. When such changes are present, the direct effect of the syphilis can be traced, and this etiological factor should always be given due consideration. Especially is this important from a therapeutic standpoint, as there is more hope from remedial measures. Dr. Welch believes that the effects from local areas of arterial sclerosis may help in understanding the general process. In a kidney recently obtained at autopsy, there was a double blood supply, one artery going to the upper, the other to the lower part of the kidney. One of these arteries showed marked sclerotic changes. The part of the kidney supplied by this showed typically the granular, wrinkled appearance with marked interstitial changes. The other part of the kidney was practically normal without any degenerative appearance.

Arteriosclerosis and Infectious Disease.—Dr. W. S. Thayer, of Baltimore, said that his attention was especially called to the effect of infectious disease in production of arteriosclerosis by observations made on typhoid fever patients. Nearly one-half of the sufferers from typhoid fever during their convalescence and afterward, showed palpable radial arteries. Sometimes these have only been recognized years after the attack of typhoid fever. Sufferers from other diseases showed the same condition in only about 17 per cent. of the cases. In the autopsy records over one-half the cases of typhoid fever showed aortic changes, many of them of recent origin. Cases of coronary disease were also found. In four cases yellow degeneration of the intima of the heart was noted. These are evidently factors that would enter into the production of arteriosclerosis. In typhoid fever, the blood pressure is higher than normal, and as this continues for weeks there is a definite tendency to the production of degeneration of arteries. If typhoid fever is so prominent, other infectious diseases are also likely to exercise a similar influence, so special studies were made in order to determine this.

Statistics in 4,000 Cases.—An analysis of 4,000 histories very carefully taken by fourth-year students at Johns Hopkins Medical School shows that hard work is the most important factor in the production of arteriosclerosis, both as regards the number of cases and the youth of the patients suffering from the affection. After hard work comes the abuse of alcohol. After alcohol, the infectious diseases by the changes which they produce in arteries, give a basis for sclerotic arterial degeneration. Among the infectious diseases, the most important is rheumatism and next after this comes typhoid fever. Scarlet fever also has a definite effect in this direction.

Syphilis and Arteriosclerosis.—Dr. C. Travis Drennen, of Hot Springs, Ark., said that undoubtedly there is a connection between arteriosclerosis and syphilis, but whether syphilis is a direct cause or not cannot be said as yet to be absolutely determined. Dr. Drennen believes that the routine methods of treating syphilis by mercury have been responsible to some extent for the production of arterial sclerosis. The toxins of syphilis act upon the arteries, but so also does mercury, as any other metallic poison that may happen to be present in the system. At a time then, when the presence of syphilis is already causing irritative changes in the arteries, the abuse of mercury is likely to be especially serious. Every physician must have the experience of having patients come into this office who announce that for years on their own responsibility they have been taking without intermission a certain amount of mercury. It would seem then that individualization of the treatment of syphilis is extremely important, lest more harm than good be done.

Arteriosclerosis and Nephritis.—Dr. George Dock, of Ann Arbor, Mich., said that formerly it was the custom to attribute arterial sclerosis to nephritis as the cause. Now, there has come the definite doctrine, more and more widely accepted, that arteriosclerosis may affect the kidney before any inflammatory changes are found in that organ. The lesion of the blood vessels would seem to be a result of a primary set of changes. Undoubtedly infectious diseases produce an effect upon the kidney which may subsequently lead to degeneration of the arteries first within the organs, and later outside. Just what causes arteriosclerosis we do not know and there is an assumption of knowledge in his matter that is to be deprecated. At the present time the studies in blood pressure promise to be of more service than any other form of observation. Undoubtedly hypertension is the most important causative factor of the condition.

Lead and Arteriosclerosis.—Dr. Frank Billings, of Chicago, said that lead poisoning is much more common than is usually thought and in certain of its latent forms may readily escape notice. The metal very readily gains an entrance into the system. Its almost universal use in the arts gives rise to frequent opportunities. A recent case seen at Cook County Hospital il-

lustrates how small an opportunity may be present for absorption of lead and yet lead poisoning ensue. The patient was a laborer in the stock yards who came suffering from typical lead palsy with drop wrist. There seemed to be no possible reason in his occupation for this poisoning. Very careful inquiry, however, elicited the fact that he handled bars of solder. This was absolutely the only lead with which he came in contact, yet it proved sufficient to give him lead poisoning. A second typical case was that of a woman who presented, besides other signs of lead poisoning, the characteristic blue line on the gums. Her husband was a painter, and her only connection with lead was in the washing of her husband's clothes. Shoemakers have been known to acquire lead poisoning as the result of keeping the tin tacks sometimes used in shoes in their mouths. Cigarmakers, who are susceptible, have been known to receive their lead poisoning as a result of rolling the cigars on tin plates. Diamond cutters acquire the disease because precious stones are imbedded in lead when about to be cut, and the slight amount of the metal which thus gets on their hands proves sufficient to produce lead poisoning. In some people, even the slightest handling of the metal soon produces toxic symptoms.

Degenerations.—There is now a well marked degeneration of red cells which is believed to be due to the presence of lead in the system. The red cells have also been found to be carriers of the metal. Whether it is through them that the arteries are affected or because the nervous system early comes under the influence of the metal and causes the rise of blood pressure is not known. The characteristic lesion of the arteries is a proliferative change with hyaline degeneration in patches. This leads ultimately to a thickening of the media with degeneration of the muscular coat. The changes are noted especially in the blood vessels of the abdomen and in the heart, lungs, liver and kidney. The kidney is the most affected organ. There is first a parenchymatous nephritis which is followed later by contraction with interstitial change. The diagnosis of lead poisoning and arteriosclerosis therefrom can only be made by exclusion. It may be said at once that the acute symptoms of lead poisoning, the blue line on the gums and the drop-wrist, are not important for the diagnosis of arteriosclerosis since this is a chronic change, and the acute symptoms often lead to the early abandonment of the occupation in which the lead finds its entrance into the system.

Alcoholism and Arteriosclerosis.—Dr. Richard C. Cabot, of Boston, said that there is a universal consensus in literature that alcohol is the most prominent factor in the production of arteriosclerosis. All the text-books of general medicine, and especially the text-books on heart and arterial disease agree in this, yet there are some skeptics. The two important questions are: What is alcoholism, and what is arteriosclerosis? As regards the latter question, Dr. Cabot believes that all cases should be excluded in which the radial artery is merely palpable, but not tortuous nor stiffened. At the Massachusetts General Hospital, a number of autopsies on patients with palpable arteries in Dr. Wright's hands did not show the presence of any changes that could be called arteriosclerosis. Alcoholism will surely be considered to be present in extreme cases where patients for long years have taken large amounts of intoxicating material. At various institutions in the State of Massachusetts where chronic alcoholics are taken, Dr. Cabot has secured the results of autopsies. Many of these individuals have taken a quart of liquor a day or confessed to forty whiskies with as many "chasers." There is no doubt of alcoholism in these cases. About fifty were excluded because of the evident presence of syphilis. In only 18 out of nearly 300 cases, that is in about 6 per cent., was there arteriosclerosis of the peripheral vessels. Of course, all patients were excluded who were over fifty years of age. If, besides the patients over forty years of age were excluded, there were only four cases or only 2 per cent. of arteriosclerosis in confessed alcoholic cases.

Arteriosclerosis Under Forty-five Years.—In what may be considered premature degeneration of arteries, that is, in men under forty-five years, Dr. Cabot had the opportunity to study 45 cases. In only six of these was there a history of alcoholism. Out of 132 autopsies at the Massachusetts General Hospital, due to arteriosclerosis, 19 cases were in patients under fifty years. Two of these were manifestly syphilitic. Of the remaining 17, only two had a history of alcoholism. In a patient who for ten years had been known to take whisky very liberally, so that a quart a day seemed a small amount, and his family thought that for ten years he had taken this much, no arteriosclerotic changes could be found. Arteriosclerosis seems to be the result of prolonged mental or physical strain much more than to the abuse of alcohol.

(To be Continued.)

SECTION ON SURGERY AND ANATOMY.

FIRST DAY—JUNE 7TH.

The Chairman's address was delivered by Dr. Charles A. Powers, of Denver. It was a forecast of the future as well as a retrospect of the past. He said that two, or at best three centuries ago a man who removed another's viscera and disposed of diseased areas and returned them thus curing the patient, would have done well had he escaped death at the stake.

Growing Importance of Surgery.—This branch of medicine with its many dependent departments has become the most astute science in the world. It calls therefore for the employment of the keenest intellects among our young men and women. This has only recently come to pass. Indeed, it dates from the dawn of the antiseptic era. Prior to that, however, a great deal of magnificent work was done and the surgeon of to-day should not fail to consult old authors who spent a great deal of time and thought in establishing differential diagnosis, which to-day, because of the decreased danger of exploratory incisions, are, it is to be regretted, not so keenly studied as they should be.

Gradual Development and Rise of Surgery.—A century ago the ablest men went into the priesthood. In time the law received an equal proportion of this element. In most recent days medicine is claiming her share, the priesthood is receiving a poorer element; the brains of the country are pretty evenly divided between the lawyer and the physician.

Personal Characteristics of the Surgeon.—Destined to carry responsibilities far greater than those of any other individual, the surgeon must be a man of the very finest mold, both mentally and morally. He must be a man of power and influence. His judicial, as well as his scientific abilities must be cultivated, for he is called to judge cases when life hangs in the balance. The surgeon and the scientific man of medicine are receiving at length their proper recognition. The great captains of industry are beginning to understand what a debt of gratitude the community owes the surgeon, and as a result they are establishing institutes which shall enable the prophylaxis of the public health and other problems of a like nature to be thoroughly worked out in the near future.

Danger in Moles and Warts.—Dr. W. W. Keen, of Philadelphia, gave the histories of 19 of these cases

which had come under his personal observation, and cited six others. He said that it must be understood that a very small percentage of moles, warts and nevi actually undergo malignant change, but on account of our present ignorance of these matters we are unable to forecast their future. Whoever has a scab upon him, will rub that scab off. Thus the patient is often to blame for the production of malignancy because continued traumata lead to malignancy. Any tumor which is constantly irritated is prone to become malignant. A certain sign of malignancy is increase in size. It is held by some pathologists that these three types of tumors degenerate invariably into epitheliomata. This, however, is not true, for sarcomatosis is not uncommon, especially in the case of pigmented moles. The only rational and safe treatment for these cases is early and complete ablation with the knife. It should be done during the harmless stage quite irrespective of the position in which the growth may be. He said he could not urge too strongly upon the profession the necessity of teaching the laity the importance of this sadly neglected subject.

In discussing Dr. Keen's paper Dr. W. L. Rodman, of Philadelphia, said that these lesions were fraught with the utmost danger to human life. The importance of disseminating this knowledge throughout the land could not be overestimated. He said that pigmented moles are the tumors which result in sarcomatosis while the other forms develop into epitheliomata.

Dr. Gustav Fütterer, of Chicago, described a form of epithelial metaplasia, examples of which he had seen in the stomachs of some of the lower mammalia, particularly in those in which the teeth being absent the stomach is obliged to do a very great deal of work in digesting, and as a result suffered more or less frequent traumatism.

Dr. Robert F. Weir, of New York, said that moles, nevi and warts should be looked upon as tumors. He advised the use of monochloracetic acid, stating that patients will often submit to the use of this when they will positively refuse to allow the surgeon to remove the growth with a knife.

Dr. A. D. Bevan, of Chicago, said that there was a possibility that the actual removal of the growth might be the cause not alone of disseminating malignant cells if they had developed at the time of operation, but also possibly drop the balance in certain cases in favor of malignant degeneration. The Pacquelin cautery should be applied to every suspicious case which should afterwards be removed with the knife. Large numbers of people, however, are blessed with a multiplicity of moles or even warts. It is therefore not always practical, if indeed it be wise, to remove them without careful consideration.

Dr. Keen, in closing, said that he had urged the removal of these tumors in as pressing a manner as he did because their danger had been brought home to him by the untimely death of a number of close friends through this preventable cause. He did not deny that common sense must dictate in this as in all other things the treatment of these cutaneous lesions, but the knowledge of their potential danger could not be too broadly known.

Starvation for Malignant Growths.—Dr. R. H. M. Dawbarn, of New York, gave a brief description of the technic of external carotid extirpation. He cited the character and the number of the anastomosis about the face and within the brain and dilated upon the bearing of these anatomical points on the operation of starving the growth. His 60 cases have shown that in the absence of complications a 5 per cent. mortality is to be expected.

Success is to be expected in sarcoma, which, as is well known, spreads by the blood vessels whereas carcinoma spreads by the lymph channels. He spoke of the desirability of tying the inferior dental and mylohyoid artery and resecting the mylohyoid nerve; this latter technic being employed as a safeguard against pain in case of recurrence. Surgeons who propose doing this operation must study the variations in the vessels of the neck and an exploratory incision should always be done to determine whether the internal carotid may not have taken, as it occasionally does, the part of the external carotid and give off important but irregular branches.

Use of Paraffin Injection.—This material combined with vaseline and introduced at a temperature of 120° F. is a convenient medium for stopping the terminal branches of the external carotid. The occipital instead of these branches, should occasionally be plugged but never both. Decision on this point is reached by considering the position of the tumor.

Dr. A. T. Bristow, of Brooklyn, said that he had performed the operation 11 times on six patients. Five were epitheliomata, the other a sarcoma. The immediate result of the operation was to relieve pain and to stop all discharge. This naturally does away with the morphine habit of which the sufferers are usually the victims. It also, even in carcinoma, causes immediate shrinkage of the growth. None of his cases had lived over a year, but they had survived in comfort and died in peace.

Dr. Dawbarn, in closing, said that Dr. Da Costa considered the operation of very great use as a possible means of bringing inoperable cases to the operating table for complete removal. It had been his good fortune to have such a case, and the man was now apparently cured.

Tumors of the Breast After the Menopause.—Dr. J. C. Stewart, of Minneapolis, said that transition of cysto-adenomata to malignant growths was not uncommon. He could therefore not understand how a prominent surgeon had recently recommended that general practitioners should aspirate all these cysts. That there is the very greatest danger of establishing general carcinomatosis by any form of unguarded exploratory incision or puncture, there can be no doubt. In women over forty years the breast is useless, and inasmuch as direct incision is dangerous, the easiest means of making what may be called an indirect exploration is to place an incision in the line which can be used for complete removal, and then to clamp all lymphatics and blood supply. He concluded that tumors of the breast should be regarded malignant until they are proven to be benign.

Dr. William Jepson, of Denver, said that we knew very little of the differential diagnosis of those growths on the borderland between the good and the bad. Cyst formation does not give prognostic indications of any value. Eighty-two per cent. of all tumors of the breast are carcinomata. A small percentage are sarcomata. Less than 10 per cent. are benign. In view of these figures, is differential diagnosis necessary?

Dr. J. C. Bloodgood, of Baltimore, stated that the proportion of malignant growths operated on is decreasing in favor of the benign forms. The reason for this is that more tumors are operated on than formerly. At least 33 per cent. of all tumors are benign. It is interesting where this factor of diminished malignancy, brought about by early operation, will bring us as time goes on. The laity must be instructed that all breast tumors are malignant and should be removed. He concluded that the only type of tumors which do not call for removal are multiple growths in patients under thirty years. In 28 cases of doubtful type in which exploratory incision was practised, but three patients have died.

Dr. Stewart, in closing, said that the conclusion of the matter was that the microscopical examination of a

tumor is sufficient. The question of the character of the exploratory incision is shown by Dr. Bloodgood's observations to be merely of academic interest.

Pathology of the Knee-joint.—Dr. A. Hoffa, of Berlin, Germany, said that papillomatosis has nothing to do with tuberculosis. He described a form of lipofibromata, a large number of which he has removed from joints. In the first case, he operated for what he thought was a displaced cartilage. A section of these fatty tumors shows a reticulum filled with endothelial cells and small amounts of fat. They are but slightly vascular. This tissue is apt to grow after moderate trauma of the joint and hemorrhages into the tumors may cause them to simulate floating cartilage very closely.

Surgical Lesions of the Axillary Plexus.—Dr. John A. Wyeth, of New York, reported a case in which no nerve trunks have been severed but in which a total paralysis of sensation and motion resulted from pressure. Section of the axilla had been made and the arm was hyperextended. He cited five cases of neuromata of the axilla and suggested that in the event of the surgeon being unable to remove them, an admirable technic might be to sever the clavicle, as he had done on one occasion, allowing it to unite with an upward angle so as to give the part more room. In his case the patient was granted three years of comfort by this method.

Dr. J. B. Murphy, of Chicago, said that the position of the arm during operation is most important. Fortunately musculospinal paralysis which is caused by allowing the arm to hang over the side of the table is rare. These paralyses, he said, are not always curable.

Matas' Operation for Popliteal Aneurism.—Dr. J. F. Binnie, of Kansas City, said that this excellent technic could be used for fusiform or for saculated aneurisms. He described the technic which he had used and reported the case in full. It was one showing marked atheroma and the aneurism measured six by four inches. Although the case suppurated, it went on to an admirable recovery.

Dr. R. Matas, of New Orleans, said that the technic was easy and that its elastic pliability made it more valuable than a positively fixed method. The points which he considered important were: Free exposure of sac, early control of all vascular openings of sac. Tier suture obliterating the walls. Restoration of lumen is often possible. Dr. Matas reported histories of six cases. This, he said, was not a large number, but the occasion for using the technic does not often occur. It is most fortunate, in the opinion of Matas, that a wide attention is being given to the operation, because it seems unquestionably to be a life-giving one.

Dr. J. B. Murphy, of Chicago, described a fatal case in which he had endeavored with apparent success to use a modification of Mayo's flap method of closing the sac. He regards infection in and about blood vessels as more dangerous than occurring anywhere else.

SECOND DAY—JUNE 8TH.

Twine in Lieu of the Elastic Ligature for Performing Gastro-enterostomy.—Dr. J. W. Draper Maury, of New York, reviewed the history of the experimental work which has recently been done at the surgical laboratory of Columbia University, and described the evolution of a twine triangular stitch. He said that it was a modification of McGraw's method, but that by the use of twine instead of elastic the technic was made available for all occasions in which it might be suitably employed. The elastic, he said, as is well known, is prone to degenerate from contact with the air. Twine is to be had anywhere, the ordinary commercial white grade too strong to be broken by the hands, serving the purpose admirably. He had brought to the meeting and demonstrated thirteen specimens of dogs' stomach and intestines which had been perforated by the twine. Two of these were recent, having been removed but a day or so ago, and they had been cut out in something less than 3½ days. He described the technic of introducing the ligature and gave a practical demonstration of it before the section.

Remarks on the Disadvantages of the Murphy Button.—Dr. Robert F. Weir, of New York, first paid a very graceful tribute to the originator of this device which, he said, had more than any other contributed to the development of the subject of abdominal surgery. One of the advantages claimed for the button consisted in the rapidity of its introduction. A wide experience has, however, proven that safety sutures are indispensable. This therefore diminishes the advantage and places the mechanism in the category of other well known technics. A disadvantage of the instrument has always been and will continue to be that makers refuse to follow the explicit directions of Murphy. Unless these be most faithfully executed, there is certain to be grave danger for the patient and disappointment for the surgeon. Weir has done gastro-enterostomy with the button seventy times. He perfected a flange to prevent it from falling into the stomach, but in the one case in which this accident befell him it proved to be the button with the flange. On the last thirty patients he has performed entero-enterostomy, and this has done away with the vicious cycle. He said that a further disadvantage with the button lay in the fact that 58 per cent. of them are not recovered, they either remaining in a fold of the colon or else being passed and lost. He said that in future he would perform gastro-enterostomy either by the Weir-Maury method of using a triangularly inserted twine, or by employing a technic which he has recently used in five cases. This consists in tying the entero-enterostomy button with a stout silk linen fish line under no tension to the entero-enterostomy button above. A small bit of twine is left to hang down into the gut from the entero-enterostomy to serve as an excitant for peristalsis. The results have been most encouraging.

Excision of the Ulcer Bearing Area in Gastric Ulcer.—Dr. W. L. Rodman, of Philadelphia, said that this technic could not be employed in any but chosen cases. In a certain proportion of gastric lesions, however, it was obviously the only surgical procedure. He described in full the technic of his method of pyloroplasty which includes the use of the Doyen clamp and the removal of the first portion of the duodenum. He said that 25 per cent. to 50 per cent. of all cases were healed by medical means. Those which are most apt to come to the surgeon are of the type found in the male who is past forty years of age. Gastro-enterostomy has failed in at least six per cent. of cases to control hemorrhage from an acute ulcer. Furthermore, it does not remove the cicatrix of the old wound, which, as is well known, is very prone to undergo degeneration.

Necessity of Drainage.—This is a *sine qua non* here more to be urged perhaps in this operation than in any other on the stomach, because of its eliminating all danger of malignant degeneration. Duodenal ulcers usually accompany or are accompanied by ulcers of the stomach. Ulcers usually are multiple contrary to the old teaching, and it is not uncommon that they occur directly on opposite surfaces of the stomach, one evidently having produced the other.

Dr. A. J. Ochsner, of Chicago, reported the histories of 86 patients on whom he had recently operated by the McGraw technic. Three of these had died, but they might fairly be considered inoperable cases. They certainly were patients upon whom he never would have even considered operation with any other technic. He

had done the operation of cholecystenterostomy upon one patient and stated that the technic was far from satisfactory for this operation. The difference in density between the two viscera prevents satisfactory manipulation. Absence of shock was very marked and is probably to be explained by the fact that there is so little manipulation. This factor undoubtedly serves also to explain much of the success of the Murphy button.

Dr. William J. Mayo expressed himself as delighted with Weir's method of tying the buttons together. He asked what would be the result if the pull of the lower button proved inadequate and the gastric button fell into the stomach? Truly there would then be a dilemma, for the string would straddle the fistula. He advised the suture operation on the posterior surface of the stomach, saying that it could be done in from 12 to 17 minutes. He felt assured that Rodman's operation is based on ideal surgical principles, but felt equally certain that it could not be carried out in all cases. Pylorectomy and partial resection of the duodenum was, in his opinion, a fairly formidable operation to suggest for the cure of an ulcerated stomach. He reiterated his belief that the vicious cycle is due to particles of food being driven out into the loop through the patent pylorus by the muscular action of the stomach.

Dr. J. B. Murphy said that the button had many more defects than had been enumerated by Dr. Weir. He admitted freely that it occasionally fell into the stomach, one of the buttons modified by Weir having disappointed him in this way at a recent date. He agreed with Dr. Ochsner that there must be the least possible manipulation of the viscera. He pointed out a very important anatomical relation. When endeavoring to place an anastomosis at the lowest point of the stomach, it must be borne in mind that the organ when dilatation begins is pressed down from above so that the cardia may often be seen one inch below the pylorus. If account of this be not taken at the time of operation, the opening will be made at a point too far to the left, and when on account of drainage, the stomach resumes its normal position, which it will, the opening is found to be too near the cardia. He said that in his opinion, Mayo was absolutely right in contending that the pylorus of each one of the cases of gastro-enterostomy should be permanently sealed, but he had not as yet found any satisfactory method for effecting this.

Dr. R. H. M. Dawbarn stated that he had for years been in the habit of using a cork instead of a faucet as a means of handling the buttons. This plug serves a double purpose in that, first, it blocks the canal and prevents possible contamination, and second, if the button should happen to drop back into the gut, as it sometimes does, the shape of the cork will not allow it to actually enter the viscus.

Gastro-enterostomy by Crushing.—Dr. L. L. McArthur, of Chicago, showed two very interesting specimens. They represented attempts to effect gastro-enterostomy by means of crushing opposing areas of the viscera and then joining them together with Lembert stitches. Finding that this technic failed, no matter how entirely crushed the gut might be, he had endeavored to complete the necrosis by tying off the blood supply with a purse string suture. This had also failed. He wished these attempts registered in order that they might prevent other experimenters from wasting time in like endeavors. One of his specimens showed very beautifully that the Lembert stitches which are placed on the outer surface of the gut eventually pass through and are extruded into the lumen.

Dr. A. A. Berg, of New York, said that due credit ought to be given in all this work to Gaston who had originally devised the technic.

Dr. S. Lloyd, of New York, criticized the twine freely. He said that if the elastic be known to work well, why look for a substitute? He stated further that the elastic begins to cut through before the twine and that the elastic is much the more readily sterilized.

Dr. W. L. Rodman, of Philadelphia, in closing said in answer to the criticism that pylororectomy was too severe an operation for the relief of ulcer and that the mortality was 30 per cent., and further that it took an undue amount of time to accomplish the technic; that the mortality in his opinion did not exceed 10 per cent. in suitably chosen cases; that the work could be done within a reasonably short time and that the great advantage of the operation lay in the fact that after it there could be no chance of malignant degeneration. No man, he said, however skilful could possibly say on inspection whether a given tumor situated in the stomach, the patient presenting which had given a history of ulcer, was or was not malignant. Medical history was full of cases which had been operated on by such men as Keen in which the patient had, after a most lamentable prognosis gone on to a speedy and permanent recovery.

Dr. Maury, in closing, said that he was not aware that Dr. Lloyd was in possession of data bearing on the relative rate at which the twine and the ligature would begin to cut their respective fistulæ. Furthermore, that he had not heard of twine being injured by boiling and that its sterilization was as easy, if not simpler, than that of the elastic. In answer to the remark that twine had been discussed as a substitute for the elastic at the New York Academy of Medicine during the past winter, he called attention to the fact that he suggested the use of twine for this purpose in a communication in the Medical News of September 12, 1903, which antedated the meetings of the Academy. In discussing Dr. Ochsner's use of the ligature to produce an opening after he had resected the greater portion of the stomach and closed the small remnant of the viscus, Dr. Maury said that it was interesting to observe that if the pylorus in dogs were sealed and the stitch put in at the same time, the dogs would die within thirty-six hours, of symptoms resembling tetany. Whether the human being was less liable to this toxemia or whether Dr. Ochsner's success was due to the fact that he had removed a large portion of the stomach which is thought to secrete the toxic substances, was difficult to say.

Rupture of Mesenteric Glands During Typhoid Simulating Intestinal Perforation.—Dr. R. G. Le Conte, of Philadelphia, said that this complication is a rare one. There are from 130 to 250 glands in the ileum. These are divided into three distinct groups, the second group, which is located at the mesentery is the one involved in this discussion. The lesion is a diffuse one and seemingly has no bearing of a direct nature on the typhoid germ. The pathological etiology is most obscure. He concluded that whatever the cause, there are always enlargement and softening. When this process extends to the blood supply of the glandular capsule, there are apt to be a destruction of this membrane and pouring out of infection into the peritoneal cavity. Although 600 cases of typhoid are treated annually at the Pennsylvania Hospital, this is the first case to be reported from that institution. If the source of infection does not come from the lumen of the gut, it seems most likely to take its origin in endothelial proliferation followed perhaps by thrombosis of the blood supply or by actual infection of the gland by the ordinary pus-producing bacteria.

Intestinal Anastomosis by a New Method.—Dr. J. S. Horsley, of Richmond, Va., described in a beautifully illustrated article a method of intestinal anastomosis which he believed to have certain points of unusual merit. The technic is of the through and through variety and was shown to be simple and efficacious by a study of the charts. He cited a fatal case and exhibited a specimen of perfect union which had been obtained at the autopsy.

Dr. Connell endorsed this suture because it was of the through and through variety. He said that no other form of stitch could have the strength of this type.

Retroperitoneal Myxolipoma.—Dr. George Ben Johnson, of Richmond, Va., said that these little known tumors were divided into three classes, (1) perirenal; (2) doubtful; (3) mesenteric. There are 48 cases in the literature. These tumors are 30 per cent. more common in women than in men. Further than this nothing is known as to their cause. The diagnosis is almost impossible because of their cystic character. A pathological report of the tumor was read.

Drainage of the Biliary Tract.—Dr. Maurice H. Richardson, of Boston, said that he regarded immediate closure of a biliary wound as absolutely contraindicated. Fistula operations are extremely dangerous. Stones are often found in the course of operations for other conditions, the existence of which has never been suspected. Very many inexplicable and unusual symptoms may be safely ascribed to gall-stones. He concluded (1) That stones when they are known to exist, if local conditions are not unfavorable, should be removed at once whether causing symptoms or not. (2) Drainage should be maintained until the bile ceases to flow. (3) An incision similar to the "gridiron" for appendicitis should be used in these operations. (4) A permanent fistula usually means an overlooked stone in the common duct.

Gall-stones in the Common Duct.—Archibald MacLaren, of St. Paul, said that gall-stones are usually to be found associated with chronic lesions of the mucous membrane of the gall-bladder. Since the mid part of the duct is the most readily dilated, stones naturally find lodgment there. In one to five or one to seven of all cases of cholelithiasis stones are lodged in the common duct. Surgically considered the gall-bladder very closely resembles the appendix and this is one reason for treating these two organs similarly. All stones should be taken out as soon as they are diagnosed because nothing is known or can be foretold of the future of the stone.

Dr. J. D. Bryant, of New York, agreed in the fullest detail with Dr. Richardson, particularly as to drainage. He said that the proliferative changes in the mucous membrane of the bile ducts must block them and that all effort should be made to take away the chance of any pressure existing in addition to the factor already mentioned.

Dr. W. J. Mayo said that the time was approaching when the general practitioner would be as eager to have gall-stones operated on early, now that his training is complete, as he is to have an appendix taken out. He said that there were certain definite indications for cholecystectomy, viz., in an already obliterated organ and in certain mild forms of cholecystitis, when nature has already indicated the non-usefulness of the organ.

Appendicitis in Children.—Dr. A. J. McCosh, of New York, said that the disease in children differs very widely and in certain various specific details from its characteristic appearance in adults. One has practically to depend for diagnosis in children upon the occurrence of persistent vomiting in the absence of food. Pain, because of the characteristic vagaries of a child, is of little or no value. The leucocyte count has been stated on very high authority to be valueless in the diagnosis of appendicitis in children. The differential diagnosis has to be made from gastro-enteritis, from basal pneumona, and from diaphragmatic pleurisy. The Author stated unconditionally that upon the testimony of persistent vomiting alone in suitably chosen cases, diagnosis for appendicitis could be reached, the symptom alone being enough to justify immediate operation. He gave a large number of statistics showing the frequency of appendicitis in children, basing his statistics upon his last thousand cases. Over 50 per cent. had occurred between the ages of 20 and 35 years, after which period the occurrence of appendicitis becomes rapidly less. Before ten years of age 7 per cent. of his patients had had appendicitis, while his youngest patient had been a babe of twelve months.

Diagnosis of Appendicitis.—Should the appendix be removed as a side issue? was discussed by Dr. F. W. McRae, of Atlanta, who based his query upon 270 cases. Twenty-five per cent. of these had been marked by obscure conditions which had a more or less direct bearing upon his mortality statistics. Endeavoring, however, to give suitable weight to this factor, he had reached the conclusion that in uncomplicated cases it was the part of wisdom to remove the appendix irrespective of its condition. This was based partly upon the ease and apparent freedom from danger of the operation, and partly upon the fact that it is almost impossible to recognize a diseased appendix with the naked eye while it is quiescent. He devoted considerable attention to a consideration of the controversy as to whether the bound down and adherent appendix should be left alone or should be excised. He said that a failure to remove the appendix is frequently followed by a necessity to excise it shortly after; this brings pain to the patient and discredit to the operator. Removal advised when operating for floating kidney, for gall-bladder and rectal troubles.

Factors in the Mortality of Appendicitis.—Dr. J. B. Deaver, of Philadelphia, said that the palpating hand of the surgeon should be the only agent used in determining whether or not to operate in a given case of appendicitis. He said that there were three causes of delay. The first was brought about by the period of latency of the disease. The second by the delay of the patient in calling his physician, and third by the delay of the physician himself in establishing a diagnosis and operating. He spoke of the appalling danger of using opiates for any form of bellyache, especially in children. He lamented that much of the old time delicacy of touch and interpretation of obscure conditions had been lost by the introduction of mechanical and laboratory means of reaching diagnosis. He reiterated the well-known belief that leucocytosis is utterly useless because, with its establishment in too many cases, the time for operation is past. Pus cases are protected by nature in three ways, by adhesions and by specific protective bodies and by dilution. Adhesions are often of limited value as a means of walling off infection and frequently fail to limit its spread. The development of antitoxins was little recognized though potent. A dilution of the infection by serum which results directly from the inflammatory reaction is an important protective mechanism. He stated that in his belief much could be learned from observing the condition of the patient while going under ether. Other things being equal, those patients who took ether badly were apt to be more seriously sick than those who took it well.

Abdominal Drainage.—It is criminal, he thought, to remove gauze within forty-eight to seventy-two hours.

It should be left for at least eight days. The cigarette drains, so much used in New York, may well be likened to a sort of kindergarten method of getting pus out of the belly. He strongly urged and insisted upon the use of Fowler's position in the postoperative treatment of peritonitis.

Dr. E. LaPlace, of Philadelphia, said that in every case in which the patient died of appendicitis some one had been guilty of allowing the prime moment to pass unheeded. He agreed in every other detail with Dr. Deaver.

Dr. A. J. Ochsner said that children should be operated on early, and if not operated upon they should at least be put in Fowler's position. He agreed with Deaver in all the various classes of appendicular involvement except one, and he felt sure that inside of five years Deaver would come to his way of thinking. He quoted from one thousand cases upon each one of which he had operated upon at the Augustana Hospital, stating that including the cases of circumscribed peritonitis, his mortality had been but 2.2 per cent.

Dr. J. B. Murphy, of Chicago, said that he had learned to dread the subsidence of symptoms. He cited 16 cases of perforative peritonitis, which he had treated with but one death. Pus in the peritoneum, as elsewhere, is prone to absorb. This is the logical reason for simply cutting a hole and relieving the pressure. On the principle that handling is bad, there should be no washing and no manipulation of any sort.

Dr. Robert T. Morris, of New York, said that in answer to the accusation that the cigarette drains were suitable for the kindergarten practice of surgery, he would advise his friend from Philadelphia not to practise taxidermy upon his patient.

(To be Continued.)

SECTION OF OBSTETRICS AND DISEASES OF WOMEN.

First Day—June 7, 1904.

Chairman's Address—Last Year's Progress in Gynecology. Senile Endometritis.—Dr. L. H. Dunning, of Indianapolis, after a brief discussion of what had been accomplished during the last year, considered the subject mentioned as the title of his paper. He expressed the belief that this complaint should be put in a class by itself. These cases were not as uncommon as ordinarily believed, as from his own experience he found that about three per cent. of the patients in his practice presented this condition. There were two varieties of the disease, the acute and the chronic. Of the former he reported a case in a woman of fifty-four years, who presented a mixed infection, one element of which was gonorrhea. The process rapidly spread to the surrounding tissues and in such cases may be sufficiently severe to demand complete hysterectomy. The chronic forms may also call for radical treatment, and he reported on the pathology of those conditions which closely resembled either carcinoma or adenoma of the cervix. The usual treatment advocated by Dr. Dunning was gradual dilatation with the tent and curettage. It is also necessary to thoroughly cure the vaginitis.

Carcinoma of the Uterine Cervix and Surrounding Tissues.—Dr. J. A. Sampson, of Baltimore, called attention to the high percentage of recurrences which followed the operative treatment for cancer of the cervix and claimed that this was sufficient evidence for the assumption that the growth had invaded the surrounding tissues at the time of the operation and that hysterectomy alone cured the disease in but a small proportion of cases. A study of the anatomical relations between the cervix and the neighboring parts showed that this relation is varied by the position of the uterus in the pelvis and that the growth did not have to extend far anteriorly in order to involve the bladder, or laterally to reach or extend beyond the ureters. A study of the specimens obtained from the more radical operative cases demonstrated how the above takes place and emphasized the importance of a wide excision of the primary growth. The only hope of bettering the results, he believed, lay in an early diagnosis, and in these early cases doing the most radical operation possible. This would afford the best chance for a cure.

Electrothermic Clamps.—Dr. C. P. Noble, of Philadelphia, presented a critical analysis of the results secured by the use of the electrothermic clamps in the treatment of cancer of the uterus, and referred to the various accidents arising from the employment of the method. The nine cases which the writer reported were all unfavorable and not suitable to any other method of treatment. There was only one death, and that from secondary hemorrhage as the direct result of the operation. One of the after complications of this operation is the liability to the production of fistulæ between the vagina and the bladder or ureter, which occurred in five of his cases. Two of these had closed, one was about to close and the other two remained open to date. He believed that in the advanced cases the electric clamp offered a very good chance for improving the condition, but considered that early diagnosis was the essential in all forms of treatment.

Primary Chorio-epithelioma Malignum Outside of the Placental Site.—Dr. Palmer Findley, of Chicago, after a general consideration of the subject and a review of the reported cases, presented an instance where the growth was primary in the uterine wall, with metastatic deposits in the vagina. The case reported was the twenty-first known. The woman had not menstruated for three years, then began again, accompanied by pain and vaginal discharge. There was also a menorrhagia. A radical operation was done and recurrences had been noted since the operation four months ago. The prognosis in such cases should always be guarded as no definite opinion can be given as to the degree of the distribution of metastatic deposits. The true nature of the growth should always be determined by pathological examination, as a case which he was about to report at this meeting turned out to be a carcinoma, containing collections of giant cells closely resembling syncytial masses.

The discussion of these three papers was begun by Dr. Wathen, of Louisville, who stated that although he advocated hysterectomy, he was entirely opposed to the extensive removal of the lymphatics as it was impossible to recognize and distinguish all the infected structures and the operation was unnecessarily prolonged.

Dr. G. B. Massey, of Philadelphia, called attention to the possibility of opening up new lymph channels by cutting operations and bringing on in this manner liability to infection from metastatic deposits. He thought cauterization preferable and claimed that a patient could stand 300 milliampères applied to the cervix without anesthesia. He also believed that interrupted applications of the cautery were preferable to a complete operation at one sitting.

Dr. A. L. Smith, of Montreal, said that he did not always find it well to wait for a pathological report but to go ahead and do an operation based on clinical evidence.

Dr. A. H. Cordier, of Kansas City, considered that good results could be had from the use of the thermocautery. The latter avoids the opportunities for infection, which had a marked influence on the rapidity of

later growth. After converting the elevated mass into a conical ulcer, he also applied carbide of calcium with good results.

Dr. J. H. Carstens, of Detroit, quoted from the recent work of Schauta, and insisted that our knowledge of the anatomy of this region was too limited to warrant extensive dissection here. The recurrences were also noted in the surrounding cellular tissue, which could not be removed. Unless the diagnosis had been sufficiently early to have done a vaginal hysterectomy, it was better to leave the case alone.

Dr. A. Goldspohn, of Chicago, said that the recurrences began in the vagina very often; he advocated a wide resection of this, rather than an extensive resection of the pelvic glands. He also claimed that it was safer to remove the uterus through the vagina, after it had been freed from above and the abdominal wall closed.

Others who took part in the discussion were Drs. Downes, Clark, Lawrence, Massey, Sandberg, Carey, Chandler, Humiston, and Theinhaus.

Technic of Wounds Incident to Laparotomy.—Dr. H. O. Marcy, of Boston, in tracing the history of this subject, referred to the modifications resulting from the introduction of antiseptic and aseptic methods. He called attention to the importance of closing as far as possible all peritoneal rents and abrasions, leaving no wounded surfaces within the abdominal cavity uncovered by healthy peritoneum. He described the method now employed by him, in which, after the peritoneum and fascia are sutured with absorbable animal sutures (catgut, kangaroo tendon), the skin wound is closed with a subcuticular suture of gut sufficiently fine to avoid causing infection from the sweat glands. Drainage was reserved for septic cases. In a clean case the wound was covered with iodoform collodion, and a further bandage is only applied when there was much vomiting expected.

The paper was discussed by Drs. Goldspohn, Orton, Longyear, Dorsett, and the Chairman, all of whom paid a high tribute to the value of Dr. Marcy's endeavors to introduce into surgery the employment of absorbable suture material.

The Appendiculo-ovarian Ligament.—Dr. D. H. Craig, of Boston, described the anatomy of this structure as first delineated by Clao and Durand, and called attention to the mechanical effect on the female pelvic organs, when the ligament is in a state of pathologic thickening and contraction. He claimed that the contraction probably very rarely, if ever, produces pure retroversion. He reported six cases personally obseved by himself, in which the diagnosis had been made before operation. The chief symptom of the condition was tenderness along a line extending from McBurney's point to the ovary.

SECOND DAY—JUNE 8TH.

Diagnosis and Treatment of Pelvic Deformity.—Dr. Geo. Boyd, of Philadelphia, referred to the frequency of pelvic deformity in America at the present time. This called attention to the diagnostic value of the pelvimeter, and the necessity for a careful study of the size and position of the fetal ovoid. The several methods of estimating the relative disproportion between the pelvic canal and the fetal body were then gone into. The induction of premature labor would be the ideal procedure, if it were possible to estimate correctly the exact length of gestation. His own experiences in this had been unsatisfactory and he thought it best to let the pregnancy go to term in most cases. Each case, however, must be studied individually. The fetal head is the only trustworthy pelvimeter. In cases of moderate deformity, the test of previous labors was the essential determinative factor. In multiparæ, where there was a history of previous labors with dead born children, Cæsarean section should be undertaken.

Dr. C. S. Bacon, of Chicago, thought that it would not be so difficult to estimate the length of pregnancy, if it were borne in mind that the morning sickness usually dated from the third or fourth week after conception, and the fetal movements from the eighteenth or nineteenth week. He believed that the high mortality in the children was due to lack of proper preparation, rather than to other causes.

Dr. Carey, of Chicago, stated that the prognosis in such cases depended on the size of the head as well as on the size of the pelvis, and also on the degree of ossification present in the fetal skull.

Heart Disease an Obstetric Complication.—Dr. C. S. Bacon, of Chicago, stated that heart disease might be due to pregnancy or labor, *e.g.*, myocarditis due to toxemia of eclampsia, and endocarditis due to puerperal infection. As preexisting heart disease did not interfere with pregnancy, its frequency corresponded to the frequency of the disease. The usual effect of heart disease on pregnancy was to cause abortion, and the effects of pregnancy on heart disease were dyspnea, bronchitis, edema, palpitation, indigestion, etc. Labor might cause sudden death. In the management of these cases, the patient's station in life and whether or not she was acquainted with her condition, determined the induction of labor. He did not think it advisable to await the spontaneous abortion. Where it was determined to carry the pregnancy to full term, the patient should assume the horizontal position as soon as any tendency to uterine contractions appeared. Opium might be given for considerable periods. During the puerperium, infection was particularly likely to occur, especially in the air passages. No nursing should be permitted and treatment should be kept up for at least three months. Among stimulants he believed that oxygen was the most valuable and trustworthy.

Dr. R. W. Holmes, of Chicago, claimed that opium should be stopped as soon as labor began, for he had seen a number of babies affected by the drug thus given. During the third stage he recommended bloodletting, and this could be accomplished by slow manual removal of the placenta. Only the smaller size bags should be used for dilatation, as the larger ones bring about an increase of intra-uterine pressure.

Dr. Carey, of Chicago, protested against the immediate removal of the placenta, as insufficient control of the hemorrhage was secured and too much danger from infection resulted.

Dr. A. O. Hastings, of Toronto, objected to manual extraction of the placenta and believed that better results could be secured from venesection. He had no bad experiences with morphine and considered it most valuable for the dyspnea. As the symptoms were often more alarming at the seventh month than they were later, he cautioned against the too early induction of labor.

Dr. Bacon, in conclusion, said that the patients needed stimulation after labor, especially by oxygen, rather than bloodletting. He also thought that the insufficient placental circulation caused the danger to the child rather than the morphine.

Cæsarean Section in Placenta Previa.—Dr. J. F. Moran, of Washington, discussed this important subject. Cæsarean section had been recommended by some writers during the last ten years, but in 24 operations by 21 operators, the maternal mortality was 20.5 per cent., and the infant mortality 24 per cent. These were all emergency operations and statistics of cases treated by other methods give a slightly lower maternal mortality, but a decidedly greater infant mortality. Present sta-

tistics were insufficient for guidance, but there was undoubtedly a limited field for the operation.

Dr. G. F. Harrison, of New York, considered that Cæsarean section for placenta previa was not a suitable surgical interference and opposed the procedure. He had never seen a case where it had been indicated in preference to other plans of obstetrical treatment.

Dr. F. F. Lawrence, of Columbus, Ohio, favored the procedure in so far as it afforded an absolute means of controlling hemorrhage and sepsis. Pulling down the foot does not control bleeding as uterine inertia is usually present.

Dr. Holmes, of Chicago, claimed that the only cases in which the operation should be done were those with a rigid os or a contracted pelvis. The statistics presented thus far were compiled by gynecologists rather than by obstetricians, and did not present a fair judgment of the subject.

Dr. Dorsey considered that placenta previa was serious enough to warrant the induction of premature labor, but the time when the patient was first seen really determined the course to be pursued.

The Difficulties and Dangers of Accouchement Forcé.—Dr. H. G. Wetherill, of Denver, believed that the present manual methods were dangerous and slow, and that the instrumental methods, in addition, required expensive special apparatus, often unavailable when most needed. For this reason he recommended the employment of graduated sizes of the Sym's duck-bill speculum for the purpose of dilating the cervix. The latter was properly grasped with tenaculæ, and the smaller sizes introduced after sufficient dilatation had been secured with a uterine dilator. A speculum could be held in each hand and stretching secured by a rocking motion. He reported two cases in which the method was successfully used (toxemia, without convulsions, but with retinitis).

Dr. J. H. Carstens, of Detroit, stated that such a method was too slow and he preferred vaginal Cæsarean section in such toxic cases.

Dr. R. W. Holmes, of Chicago, believed that the os was usually too high to permit of the introduction of these specula and that the tenaculæ were liable to tear out. A number of others also spoke against the advisability of the method.

Repair of the Anterior Vaginal Wall after Labor.—Dr. B. C. Hirst, of Philadelphia, read this paper, in which he called attention to the importance of examining all women after delivery in order to detect injuries of the urogenital diaphragm in the anterior wall of the vagina, the urogenital muscle and its fascia. This should be done digitally by preference, and the reader claimed that it was feasible to repair the injury primarily, although it might be submucous. He detailed the best form of operation for a cystocele when developed and considered that it might be safely done within five days after delivery without danger. The report of a large number of cases from the author's operative service followed.

New Operation for Cystocele.—Dr. J. Riddle Goffe, of New York, believed that cystocele in virgins and nulliparæ was usually due to supravaginal elongation of the cervix. This brought about a general descensus of the upper support of the vagina and the anterior vaginal wall, and a consequent prolapse of the bladder. In multiparæ cystocele was a frequent accompaniment of retroposition of the uterus, sometimes descensus and prolapse of that organ. When these conditions did not exist, cystocele partook of the character of a true hernia. He then commented on the inefficiency of previous operations and the reasons for this, as they do not take into account the true anatomical conditions. In the operation which he suggested, the bladder was freed from it attachments through a T-shaped incision in the anterior vaginal wall, and stitched by means of three sutures, to the uterus and the broad ligaments on either side. This avoids a folding of the base of the bladder and the formation of pockets. It also prevents shortening of the anterior wall. He reported eight successful cases.

The discussion on these two papers was combined. Dr. Price, of Philadelphia, insisted that intermediate repair was not good surgery, and was unsafe on account of the septic condition of the vaginal canal. Others who discussed the papers were Drs. Chandler, Stone, Bovée, and Burtenshaw. The latter thought that the broad ligaments were too friable for the attachment of the bladder. Dr. Holmes claimed that a cystocele during the first few days after delivery was a physiological condition, and that time should elapse before any operation be undertaken.

Repair of Pelvic Floor Lacerations.—Dr. J. Hawley Burtenshaw, of New York, pointed out the advantages from immediate repair of lacerations and said that the failure to obtain good results was usually due to lack of appreciation of the pathology. He claimed that few modern operations of secondary perineorrhaphy accomplished what was alleged for them. They reduced the lumen of the canal and partially closed the outlet, but did not restore the floor to the normal. Vaginal sulci might frequently be demonstrated in women without laceration of the levator, and therefore their presence was not pathognomonic of laceration. In order to close muscular rents, their edges must be raw and closely approximated, and held so until united. Most posterior wall surgery did not expose levator ani muscle and fascia, but the muscular wall was partially denuded and backed up against itself, in which position the surfaces united. Nothing more was gained by Emmet's operation than by Hegar's, because denudation in each was superficial. The muscular walls of the vagina should be firmly anchored to the sphincter vaginæ, to other muscular structures at the orifice and to a movable organ, the uterus. The introduction of sutures in the sulci by the Emmet method had a marked tendency to draw the wall downward and thus increased the traction on an already retrodisplaced womb.

Treatment of Complete Uterine and Vaginal Prolapse.—Dr. F. H. Wiggin, of New York, stated that this condition is practically a reducible hernia through the pelvic floor, due primarily to the separation of the tendons of the muscles forming this floor and the consequent formation of a rectocele. The indications for treatment were, the reduction of the hernia, the obliteration of the sac, the repair of the pelvic floor and the removal of redundant tissue on the anterior vaginal wall. In the reader's experience the obliteration of the sac was best accomplished by intra-abdominal support obtained by means of purse-string sutures passed through the body of the uterus and broad ligaments on either side.

Multiple Abscesses of the Omentum Following Grave Septic Peritonitis.—Dr. H. O. Pantzer, of Indianapolis, read this paper and reported two cases.

(To be Continued.)

SECTION ON PEDIATRICS.

First Day—June 7th.

The first session was called to order on Tuesday, June 7, at 2.30 P.M., with Dr. Charles G. Kerley, of New York, presiding.

The Chairman's Address: The Demands of the Child by Virtue of Right.—After extending a wel-

come to the members and guests, Dr. Kerley gave some of his impressions and thoughts which were the result of sixteen years' observation of children. He emphasized the importance which is given to the care of domestic animals, the mother is nourished and kept under conditions favorable to the production of a healthy offspring and the young animal is even more carefully fostered. Only by so doing may the highest type be produced. This principle is recognized by the National Department of Agriculture, which makes practical application of these facts in the rearing of domestic animals. The physician should realize the still greater importance of the necessity of his supervision of the conditions surrounding the unborn child and of the proper nourishment, cleanliness and environment generally of the growing child. Each year should produce its proper growth. Lost or retarded growth could never be made up in a later year and always showed in maturity. Instincts in animals tells them what they shall eat. It tells man nothing, but he may be taught, and the physician must do this. In a series of observation among children of the laboring classes of New York, only twenty per cent. were found normally developed. The large percentage of the poorly developed was due not to insufficient food but to the wrong kind of food. Early management therefore and particularly early nutrition of the child become of the greatest importance to the State, and education of mothers in all that conduces to the production of healthy children is our public duty as physicians. One reason why country children are generally stronger than city children lies in the fact that country mothers more frequently prepare the food while the city mother depends upon food already prepared. Heredity is an important factor in the development of the child, but nutrition and cleanliness are of far greater importance. Many vocations now require a physical examination to prove the elegibility of the adult and the public has a right to demand this, but the child also has an equal right to a proper preparation for this condition. From the lack of this proper physical preparation of the child, criminals, degenerates and weaklings have been produced. A study of children in the New York Children's Court fully demonstrates the truth of this statement. Most of these were found to be underdeveloped, anemic and dirty, while not one-third of them had proper home surroundings. A merchant in New York City had, after physical examination, rejected 240 out of 250 applicants for positions requiring physical strength in young women. The condition of children in England, where 60 per cent. are underfed, is worse than in America, and there is cause for fear of the mental degeneration of children in the future unless the tendency of present conditions is altered. This should be done by governmental prevention of overcrowding and unhealthy conditions, such as are found in our large cities. Since ignorance is the larger cause of the improper conditions surrounding children the physicians who alone are particularly fitted to do so should teach the mother how to properly rear her children. It seems that the future of the United States depends upon the doctors more than upon any other calling.

Erythema Nodosum in Children.—In discussing this rare disease Dr. Isaac A. Abt, of Chicago, said that the older and also the modern writers are not agreed upon the differentiation between the two varieties of erythema nodosum and erythema multiforme, but, he believes, that certainly erythema nodosum belongs among the exanthematous diseases, although Levene thinks that it is developed upon an angioneurotic basis and Fenger that it is due to a septic process. The disease occurs in anemic children or in those in a depressed condition from any cause, but it may occur in healthy individuals and generally appears from the second to the fourteenth year. Gastro-intestinal and other symptoms such as occur in exanthematous diseases are present at the beginning. The nodes which appear on the dorsum of the feet upon the legs, thighs or forearms are round or oval and vary from the size of a walnut to that of a hen's egg. They have no well defined border and two never coalesce. They are firm to pressure, and painful. The skin over them is tense, and at first bright red, but in a day or two this becomes dull read or bluish and subsequently undergoes the color changes observed in a bruise. Together with these changes there is observed a subsidence of the pain, swelling and constitutional symptoms; but there are usually repeated crops. The nodes may appear in the mouth and break down, forming ulcers. The duration of a crop of nodes is from eight to fourteen days, while the time from the appearance of the first symptoms to the disappearance of the last crop of nodes may be three or four and sometimes even eight weeks. Some writers on the subject have believed rheumatism an etiological factor in erythema nodosum, but that clinical observations have not upheld this theory. The pain present in erythema nodosum, upon which those who have held this idea have based their belief, is also present in other exanthematous diseases, notably scarlet fever, measles, and smallpox, and that therefore this belief may not be well founded. The pain during the prodromal stage was due largely to the tensity of the skin at the site of the nodes. Endocarditis, septic in form, and meningitis also occur at times. Some writers have claimed that there is a connection between tuberculosis and erythema nodosum, but this has been disproved, particularly by Kühn. However, the relation, as shown clinically, is an intensely interesting one. Infectious diseases do prepare the way for erythema nodosum and many sequelæ similar to those which occur after the exanthematous diseases are likely to follow.

Dr. Liebenthal, of Chicago, suggested that the confusion in the classification of erythema nodosum as distinguished from erythema exsudativum might be lessened by remembering that one begins on the dorsum of the foot while the other appears first on the dorsum of the hands, and that the microscopical pathological findings were very similar to those present in urticaria.

Whooping-cough—A Study of Seventeen Cases Treated with the Elastic Abdominal Belt.—Dr. T. W. Kilmer, of New York, said that he had applied this treatment to seventeen consecutive (not selected) cases and that the method was to apply a stockinette band extending from the axillæ to the hips and over this an elastic bandage of similar material to that used in elastic stockings, putting it slightly on the stretch and stitching the upper and lower edges to the stockinette band to prevent curling. If necessary to produce the desired results the bandage may be made tight. He showed charts of his cases indicating the ratio in frequency of the cough to the vomiting. During the first week of observation the child being only under placebo treatment this was as twelve to eight. After he applied the belt, at the end of one week he said the results were always marked, sometimes spectacular, and only in one case in eighteen did he fail to stop the vomiting, while in only six was there failure to stop or greatly lessen the cough, and in one case in which the coughing and vomiting had been entirely stopped by the application of the belt they began again when the belt was removed by the mother. He said incidentally that this method of treatment had been tried with success in the vomiting of pregnancy and in conclusion that he thought the application of the elastic belt should be given a fair and impartial trial in the treatment of whooping-cough, since

in his experience it had apparently aborted many cases and had practically stopped the vomiting in all but one of the other.

Dr. Bernhardt, of Butte, Mont., suggested that perhaps the impossibility of the inspiration might be the cause of lessened cough.

Dr. Kerley said that he had seen the cases reported upon and noted the particular efficiency of the treatment in children of one year in whom the administration of drugs is difficult.

Dr. Gilbert, of Louisville, Ky., suggested the danger of hernia, since this sometimes occurs in the new-born after the application of the ordinary abdominal binder, and asked Dr. Kilmer's theory as to the cause of favorable results.

Dr. Kilmer said, in closing, that the action of the belt was of course purely mechanical, that he had no case of hernia following the application of the belt and that in the cases reported he had given no other treatment and compared this treatment to the relief known to follow application of pressure over the stomach in sea sickness.

Malnutrition and Infantile Tuberculosis.—Dr. Louis Fischer, of New York, said that in the study of five thousand ordinary clinic cases of children belonging to the poorer classes the appearance of tuberculosis was noted in fifty-nine of them, and in seventeen hundred of the cases there was some form of pharyngeal or laryngeal disease, but no tuberculosis of the lungs or other organs. He said that of the tuberculous patients only two were breast fed, and in these the mothers were poorly nourished and in no condition to nurse their babies, and that most of the tuberculosis cases showed improper nourishment as shown by poor frame, weak bones, flabby muscles and other evidences of rickets. His cases had been corroborative of the facts shown in the literature on the subject, and he thought that the majority of tuberculosis babies were bottle-fed babies, therefore the importance of cow's milk. He said that opinion was divided as to the route of invasion in tuberculosis, but that there were good reasons for believing that either the bronchial or the mesenteric glands might be first infected, and mentioned Dr. Osler as favoring the former and Dr. Delafield the latter route to the lungs. As to prophylaxis, Dr. Fischer said that if possible all babies should be breast-fed, so that the danger of faulty feeding is lessened, and in this connection he said that perhaps the serum of mother's milk may contain an immunizing substance acting in the child antagonistically to the tubercle bacillus, and that fresh air and sunshine were of equal importance.

Dr. Jacobi, of New York, said that if he were asked what he would do with the tenement house baby if its mother were tuberculous he would say, don't allow her to nurse her baby, not that the milk was dangerous, although it might be, but because of the danger to the child because of her expectoration and the particles of sputum scattered about when she coughed. If the baby be removed from the mother its chances of growing up well and strong are greatly increased, but if it remains with the mother it will almost certainly become tuberculous. He said that milk from one cow is always dangerous, but that the danger is greatly lessened when a baby is fed with the mixed milk of a herd. He also said that intestinal tuberculariza tion is certain and that he had demonstrated tubercle bacilli in ascitic fluid post mortem in a case where there were no lesions of the mucous membrane of the intestines, thus proving that the bacilli may pass through healthy tissues and that this was true also of lung tissue. Infections through the nose also occur, but that in reality it is not an infection by inhalation for the bacilli lodge in the pharynx and larynx, and when conditions permit infection occurs from there through the lymph spaces to the glandular structures of the neck and mediastinum.

Dr. W. B. Ulrich, of Chester, Pa., said that there is a tuberculous diathesis in children of tuberculous parents and that the beginning of prophylaxis should be in the control of marriage and that a tuberculous mother should not have children.

Dr. Fischer said, in closing, that the tuberculous mother certainly should be isolated from her child, and also, if possible, from her husband. He said also that a large percentage of children infected with tubercle bacilli had been previously fed upon condensed milk and that this was the cause of a poorly nourished condition of children.

(To be Continued.)

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BOOK REVIEWS.

Lessons on the Eye for the Use of Undergraduate Students. By Frank L. Henderson, Ophthalmic Surgeon to the St. Mary's Infirmary and the Christian Orphan's Home, Consulting Oculist to the St. Louis City Hospital, The Wabash Railroad, etc. Third edition. P. Blakiston's Son & Co., Philadelphia.

This book will no doubt serve an excellent purpose among the very numerous examples of its class, intended simply for students. It is a little hard to distinguish individual merits where much is necessarily omitted, and the chief virtue seems to be the selection of what is indispensable for passing examinations. In this book, however, the virtue of brevity is not sacrificed, and a broader point of view is to a certain extent retained. The illustrations are better than those in other books of the same caliber and not too numerous.

New Psychology. By J. P. Gordy, Ph.D., LL.D., Head of the Pedagogical Department of the Ohio State University. Hinds and Noble, New York.

Psychology has become of ever-increasing interest in recent years for the physician. The newer psychology especially, because of its practical bearings, has proved useful. The present little manual serves well the purpose of an introduction to the new psychology and while it is meant for the teacher rather than for the physician it cannot but be suggestive to those interested in varying mental states. Some idea of its popularity may be gathered from the fact that though the first edition was published in 1898, it had reached its twelfth edition before 1903, and is still in demand. The book was written principally for the benefit of that large number of progressive young teachers who have not enjoyed the benefits of a college education and consequently is likely to be of service especially to those who have not had previous instruction in psychology. The arrangement of the book is such as to commend itself and there is a logical gradation in the method of imparting successive steps in psychology that constantly keeps up the interest.

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ORIGINAL ARTICLES.

MANAGEMENT OF FEVER IN CHILDHOOD.[1]

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By fever we understand an abnormal elevation of the body temperature continued throughout the day, or if not continuous, at least intermittently repeated, due to some infection, some local inflammatory process, or to some unexplained disturbed state of the nervous system, and presenting the phenomena of rise of temperature, quickened circulation, marked tissue change and disordered secretions.

No symptom of disease was more carefully studied by the ancients than the temperature as estimated by the rate of the pulse, and Hippocrates based his prognosis upon the height of the temperature. From the time of Galen and Aristotle down to long after the discovery of the circulation of the blood by Harvey, the heart was believed to be the source of this heat, and it was variously thought to be due to an overproduction, to obstruction to the flow of the vital spirit, to evil spirits, and to various circulating humors.

The chemical era, however, finally recognized that the heat was due to oxidation, and hence the production of heat was not limited to any one organ, but was generated in all parts of the body.

Sanctorius, of Padua, and Galileo, toward the close of the sixteenth century, invented thermometers. These were first made of alcohol, but Halley in 1680 recommended the use of mercury in thermometers, and Fahrenheit first presented his in 1720, and Celsius his centigrade in 1742. Boerhaave, in the early part of the eighteenth century, was probably the first to use the thermometer in fever, and his practice was ably elaborated by his pupil Dr. Hann, but the thermometer did not come into general clinical use until Gavarret, in 1839, and twenty years later, Zimmermann, Traube and Wunderlich urged its advantages.

Since this time we have swung from an overestimate of the prognostic value of the height of the temperature to the recent belief that its greatest importance lies in its diagnostic advantages, and as a day-to-day indicator of the progress of the disease.

Before we can well understand the management of fever we must comprehend the pathology, and before we can well understand the pathology we must comprehend the normal mechanism of animal heat. The sole cause of this heat is a chemical process, a combustion of food substances by the oxygen taken in by the animal.

About four-fifths of the total body-heat is produced in the skeletal muscles, through an oxidation whereby oxygen is absorbed and carbonic acid given off, though the processes passed through are probably much more complex than mere oxidations. The other one-fifth of the animal heat is furnished by the secreting glands and alimentary canal during digestion; hence the additional ability to withstand cold after a hearty meal. Even the thermometer in the mouth will show a higher reading just after a meal than before. During acute fevers, glandular activity and digestion are at a low ebb, and almost the entire heat-production in these conditions is probably due to oxidation or changes in the muscular system,—hence the wasting.

Any muscular or mental activity, or the taking of food, will slightly raise the temperature, though external surroundings do not much affect the temperature of adults. But the babe because its equilibrium regulating apparatus is undeveloped, and the convalescing adult because his is impaired, are easily made colder or warmer by sudden changes of the external air and by internal disturbances.

A word as to the physiology of heat-regulation: The equilibrium of the body temperature must be governed by the relation of the heat-loss to the heat-production, and as the one increases so must the other, and all of this mechanism must be under the control of some finely adjusted nerve-governor. Various theories have been offered, ranging from McAllister's three centers, *viz.*, a thermogenic, or heat-producing center; a thermolytic, or heat-dispersing center, and a thermotoxic, or heat-controlling center, to Schaffer and Moore's belief that the vasomotor mechanism in the medulla oblongata is sufficient to arrange all regulation of heat-loss to heat-production. There is no known structural difference before or after the heat-regulating power has developed, but this power appears to be associated with the control over the skeletal muscles and blood vessels.

Now as to the pathology of fever: Its cause must be an overproduction of heat or a diminished loss of heat, or both. This may be due to anything that interferes with the vasomotor regulating apparatus, or to anything that increases chemical activity, be it grandular, muscular, or metabolic.

Probably most fevers are due to poisoning from some source, the character of the fever of course depending upon the kind of poison. Anything that irritates or excites the brain may interfere with heat-regulation and cause fever to occur. This is especially noticeable in convalescents and

[1] Read before the Practitioners' Club, December, 1903.

infants, as too much excitement, overeating, etc., causes a return of fever in the convalescent, or a febricula with the cause unfound in the infant, and all meaning a vasomotor ataxia, or a thermotoxic power impaired or undeveloped.

A malarial paroxysm is perhaps the best type of the immediate stoppage of heat-loss, with a consequent sudden enormous rise of temperature. As the infected red blood corpuscles burst from the presence of the matured plasmodia, the first impression on the nervous system is to cause a sudden irritation of the vasomotor centers, and a resultant contraction of the peripheral vessels, and the symptom is a chill more or less pronounced. The internal temperature, perhaps partly from the poison, certainly largely from the obstructed heat-loss, rises rapidly and often to a great height, which is sustained until the now superheated skin and overstimulated sweat glands begin to pour out a profuse perspiration and the heat-loss first exceeds and then equals heat-production and the normal equilibrium is once more established.

Brasch has examined the spinal cord of a number of persons suffering from fever, and found that the outline of the ganglion cells were rounded, that they appeared swollen, and were much paler than normal. The swelling extended to the protoplasmic processes. These results are thought to contradict those of Juliusberger and Meyer, who found only a collection of fine granules in the center of the cell. On the other hand, the changes correspond closely with those described by Goldscheider and Flatau as a result of experimental febrile conditions. These changes disappear very rapidly if the fever subsides, as appears to have been the case in one spinal cord from a patient suffering from pneumonia. In hectic fever these changes do not occur.

It is possible that if fever persists for a sufficient length of time retrograde changes may take place.

Under the head of general treatment sleep is a very important point, and must not be disturbed, except in conditions of sepsis and depressed brain action. In both these there is no sound sleep, but sopor, which should be interrupted. In sepsis (as diphtheria and others) this rousing from sopor is an absolute necessity. Unless they are aroused frequently, to be fed sufficiently, and stimulated freely, the patients are apt to die. Besides, in most of the cases, the temperature is not high, and there is no contra-indication to feeding on that account.

If, on the other hand, the fever is a continued one, or even continuous for a few days, we must then analyze the conditions. Is the amount of fever due to the germ, to the local inflammatory conditions, or to the disease *per se?* If it be any one of these, our first duty is to keep the patient cool and quiet. And how important quiet is when we consider that every excitement causes restlessness, and this means muscle movement through which heat-production is increased.

It will frequently be necessary to give hypnotics, not only for the brain-rest, but for the good to be obtained from absolute muscle-rest. The bowels should be kept carefully cleaned out, not alone for the relief of the liver, and therefore of the blood, but also to prevent fermentation, decomposition and reabsorption of all the products of bowel infection.

Before we consider the medicinal management of fever—that is, of lowering the temperature—we should analyze its causes, carefully note the immediate effects on the individual, whether dangerous to the organism or not, consider the probable future of the fever, and also question if this is not nature's method of combating the toxicity of the germ or germ products. In the first place a high temperature, that is, 104° F. or more, whether in a test-tube or artificially produced in infected animals, is not conducive to the activity of many germs, notably the pneumococcus or the bacillus of Eberth.

Whether in the human animal a temperature of 104° to 105° F. kills off the above germs rapidly, or better forms antitoxin to combat them, would be hard to decide, and certainly it would be hard to convince us that a temperature of 104° F. or above was desirable in pneumonia or typhoid fever. The first question to ask in considering treatment of a case is, Is this temperature high enough to antagonize with remedial agents or not? If high, is it dangerous to life either immediately or remotely? We all know that the system can sustain for a short time a temperature of 105°, or even 106° F., without danger or damage, while a long-continued temperature of 101° F. is serious to the heart, muscles and nervous system.

With a short-lived fever, as that of a malarial paroxysm, or influenza, if it is high it may cause some symptoms that are very unpleasant, and which may call for treatment, but the fever, as such, requires no treatment. If we now decide that this fever is in excess of that due to the disease *per se,* we must seek the additional cause, and with each disease we know where to seek its local manifestations.

In the varied local inflammations it would seem to indicate pus, as in appendicitis, pleuritis, synovitis, otitis media, etc.

The medicinal management of fever must be governed by each individual case. Strychnine, caffeine, cocaine and atropine all raise the temperature by increasing muscular and cerebral activity, and the latter by reducing heat-loss by preventing perspiration. Alcohol, nicotine and morphine diminish temperature; the first two by relaxing the blood vessels and increasing perspiration, and the last by preventing all glandular and molecular activity.

Clinically, then, with high fever we should stimulate with alcohol, but with depression we should stimulate with strychnine. Antipyrin is the most efficient agent in depressing the temperature, but the profuse perspiration that it causes is often very prostrating. Acetanilid does not cause as profuse sweating, but is more directly

depressant to the heart, hence it is well to combine with it a little caffeine or other heart tonic.

Phenacetin is the safest of these three so far as depression is concerned. If the temperature still keeps too high, we can in short fevers use the coal tar products in proper doses a few times, perhaps, carefully noting the effects on the heart, but generally the use of cold in some form is more satisfactory.

This leads me to speak of the hydrotherapeutic management. A carefully regulated ingestion of ice or cold water also tends to diminish the temperature. In young children and infants, where they are not much prostrated, the rectal irrigation with the patient in the Sims' position gives good and immediate results. In cases where there is great prostration the ice cap to the head or the sheet pack may be employed. Given as follows it produces the minimum amount of shock. After the removal of all clothing take a sheet dipped in warm water, and wrap carefully and smoothly about the child; over this a second sheet wrung out of cold water is to be applied. After the application of the second sheet gentle friction with the hands to prevent capillary engagement is indicated.

When the outer sheet becomes slightly warm, cold water can be rubbed over by means of a sponge. In the application of this treatment two symptoms should be constantly kept in mind. One is the character of the breathing, and the other is the tendency to cyanosis. Should the breathing become irregular, or the lips blue, during the application of this treatment the child is to be removed from the pack and placed between warm blankets. The application of this treatment will require from ten to fifteen minutes. At the end of this time the child is to be rubbed until the skin is dry and has a good healthy glow. The repetition of this treatment will depend upon the recurrence of fever, and its influence upon the patient. In cases where the fever has been complicated by convulsions, it is always best, after the child has been placed in bed, to apply cold cloths to the head or use a water bag for a pillow.

If the temperature, even though brief in duration, is so high as to be dangerous to life, as occurs in insolation, in which such a chemical or nervous change has taken place from the external heat, so that heat-loss seems to be impossible, nothing is so effectual or is so likely to save life as immersion in a tub of cold water gradually made colder by ice.

Fever consumes nitrogen, oxygen, carbon, water, and also salts. These losses must be repaired with great care. For fever at the same time diminishes the secretion of saliva, and of gastric juice, probably also of the pancreatic secretion. Besides, it renders the stomach hyperesthetic, consequently nausea and vomiting ensue; it also impairs the absorbing power of all the mucous membranes. Therefore we have a lowered capacity for all kinds of food.

Toxic Fevers.—In no class of cases that a physician is called upon to treat are the results more satisfactory than in those due to products of fermentation, when the intelligent cooperation of the parents or of a trained nurse can be secured. If the parents themselves are lax in discipline, and are unable to govern the child, an efficient trained nurse must be secured, into whose hands the exclusive management of the child should be placed. The essential part of the treatment is that relating to diet. It has been my practice to clear the digestive tract of all fermentative products. Then keeping the fever under control by cold sponging, ice cap or rectal irrigation, I proceed to combat the toxemia by stimulating the organs of elimination, viz., the kidneys, bowels and skin.

I do not believe that in all cases all food must be stopped, but, on the contrary, I do believe that the patient should be sustained by proper food. A small amount of peptone is absorbed both in the stomach and rectum. In moderate fevers some sugar is absorbed, also albumin, and fat in but small quantities, because of its tendency to become acid; starch finds its saliva more or less diminished,—thus its amount must be carefully estimated. Giving in undue quantity may result injuriously by acting as a mechanical irritant, and give rise to fermentation. In ordinary fevers the food must be liquid and rather cool; in vomiting, cold; in respiratory diseases, warm; in collapse, hot. The best feeding time is the remission. In intermittent fevers nothing should be given during the attack except water, or acidulated water, with now and then an alcoholic stimulant. In septic fevers, nothing should be given during a chill except cold or hot water, according to the wishes of the patient, with an alcoholic stimulant. The scheme suggested by Dr. Coit, of this city, for feeding children from twelve months to two years of age who are suffering with fever, seems to me to be a very accurate and simple way in which to manage the diet in these conditions, viz., when the evening rectal temperature is 100° F. or above it, no food except milk containing fat two per cent., proteid one per cent., sugar five per cent., should be employed, or better still, cut down the regular milk formula which the child is taking according to this plan, which should be advanced in a progressive series:

	ozs.	ozs.	ozs.	ozs.
First, boiled regular milk.....	Three	ounces, then 4,	then 5,	then 6, then 6½.
Boiled water...	Two	ounces, then 2,	then 1,	then 1, then 1.
Lime water....	One-half	ounce, then ½,	then ½,	then ½, then 0.

When the evening rectal temperature is below 100° F. advance one step in the above plan each day until full strength milk is again used. When the evening rectal temperature is steadily below 100° F., yet above normal, allow only besides the milk, bread and butter with first, third and fifth meals, and broth and dextrine biscuit with midday meal.

When the evening rectal temperature is steadily normal allow cereals and sterile cream with first and fifth meals, and when this is well borne add

to the midday meal gradually, first starchy vegetables, milk puddings, green vegetables, then eggs, white meats and finally red meats.

I wish to call your attention to the following as one form of fever which defies both medicinal and hydrotherapeutic measures of treatment:

Inanition or starvation fever is a condition depending upon insufficient feeding or lack of assimilation. It is common in early infancy, and would undoubtedly be much more frequently recognized were the temperatures of infants taken more often. It usually develops under one of the following conditions: First, when a child refuses all food, whether from the breast or bottle, or can be made to take only so small an amount that it is not enough to support life. Second, when the food given is entirely inadequate, as when a child is nursing upon a dry breast, or one in which the milk supply is so scanty that it gets practically nothing. Third, when the character of the food is improper. Fourth, when the infant at birth has such feeble powers of digestion, because it is premature or delicate, that it is unable to digest and assimilate enough of the food given to sustain life. Fifth, when a sudden change of food is made to one so difficult of digestion that the child is unable to assimilate it. This may happen after sudden weaning.

The temperature is variable; in the newborn it is often high, but may be subnormal. The pulse is always weak andrapid. The existence of inanition in young infants presupposes only the feeblest powers of digestion and assimilation. If possible a good wet nurse should be secured. This is one of the few conditions in which wet nursing is almost indispensable. If one cannot be obtained, milk containing 1 per cent of fat, ½ per cent. of proteid and 5 per cent. of sugar, thoroughly alkalized and peptonized, should be given. If food is not readily taken it should be given by gavage. This is frequently necessary, as very many of these infants will not take food at all, or only in such small quantity as to be insufficient for nourishment. If there is vomiting this percentage may need to be lowered. As soon as the child begins to improve, one must be careful about increasing the food too rapidly, for renewed vomiting with aggravation of all the other symptoms is sure to follow such a mistake. The temperature should be controlled by cold sponging, cold to the head and heat to the extremities. As soon as the child begins to take food and assimilate it the temperature will disappear.

The first thing to do in case of inanition is to examine the mother's breasts and milk, which usually discloses one of the following conditions: First, overrich milk and quantity abundant. Second, milk poor in quality and scanty with breasts flabby. Third, quality good, amount scanty. Fourth quantity abundant, quality poor.

Proper management of the mother by stimulating her milk making capacity sometimes avoids the unpleasant necessity of a wet nurse, or artificial feeding.

The foregoing example illustrates a form of fever which can be successfully treated only by dietetic measures, and plainly indicates our duty in determining the cause, whether it be toxic, or inflammatory, or some disturbed nerve state.

TWO CASES OF PARALYSIS OF THE ULNAR NERVE; ONE FOLLOWING A SEVERE ATTACK OF TYPHOID FEVER; THE OTHER CAUSED BY PRESSURE DURING OCCUPATION.[1]

BY JAMES HENDRIE LLOYD, A.M., M.D.,
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Isolated paralysis of the ulnar nerve from any cause is, I should judge, not a frequent affair, in spite of what some authors say to the contrary. Personally I have seen but few cases of it in a somewhat extended neurological experience. In view, therefore, of the fact that the isolated paralysis of any nerve gives unusually favorable opportunities for the study of its relations and actions when in health, and that these relations and actions of the ulnar nerve are particularly striking, it is always worth while to study these individual cases with more than ordinary care.

The causes of paralysis of the ulnar nerve are very numerous, but the great majority of them belong to the category of wounds and injuries. I saw an instance some years ago in which this nerve, along with the ulnar artery, was completely severed by broken glass in the case of a house-painter who fell through a sky-light. As I have said elsewhere,[2] all sorts of cuts from all sorts of weapons may injure the ulnar nerve, because this nerve in some parts of its course, especially near the elbow-joint, is unusually exposed. Gunshot and pistol shot wounds have involved the ulnar nerve. Ballet recorded an instance in which the nerve was injured by prolonged pressure in a glass-blower while at his work. Briddon related a case of sarcoma of the ulnar nerve, which eventually led to amputation at the shoulder-joint and exsection of the scapula. S. Jones saw a case of neuroma of the ulnar, causing paralysis of the nerve. F. J. Lutz reported a case of habitual dislocation of this nerve, and Blattmann wrote on this subject as early as 1851. Dr. H. R. Wharton, of Philadelphia, has also reported a case of dislocation of the ulnar nerve, and has collected 13 cases from the literature.

This accident may be caused by fracture of the humerus or by dislocation of the elbow, or by direct violence, such as muscular effort or violent flexion of the forearm. Fracture of the bones of the upper extremity has more than once caused paralysis of the ulnar. Panas narrated a curious case of such paralysis that did not occur until twelve years after a fracture at the elbow, and was possibly due to a thickening of the nerve sheath caused by irritation from redundant callus. Avezon related a case caused by fracture

[1] Read before the Philadelphia Neurological Society at its regular meeting, December, 1903.

[2] See the author's article on "Diseases of the Cerebrospinal and Sympathetic Nerves" in the Twentieth Century Practice, Vol. XI, from which most of the above references are taken.

of the humerus. Pressure palsy of the ulnar nerve caused during sleep is evidently not nearly so common as this palsy in the musculospiral nerve, and yet it has occurred. Brauns (quoted by Gowers) advanced the theory that when the nerve is compressed during sleep, the pressure is more likely to occur at the shoulder than near the elbow and especially when the arms are held in the position in which the hands are clasped behind the head.

This subject of pressure is of particular significance in all cases that occur when the patient is unconscious, whether this unconsciousness comes from sleep, from drunkenness, from ether anesthesia, or from the poison of typhoid fever. Thus, within the past month I have seen paralysis of both ulnar nerves in the case of a large, stout woman who had been under ether for a long time for a pelvic operation. The palsy, however, was slight and transient, but the complication was doubtless due to pressure, probably with the arms resting on the edge of the table. Gowers refers to a case in a woman due to pressure during a hard and protracted labor.

Isolated paralysis of the ulnar nerve due to a blood infection presents a very different problem. It is not, in fact, easy to understand how a general systemic poison should cause such an isolated paralysis. It is too well known, of course, to need more than mere mention, that a general multiple neuritis is not uncommon from a systemic poison. Thus alcoholism, diphtheria, and typhoid fever may cause a polyneuritis, but except in the case of lead, which often selects the interosseous and some other branches of the musculospiral nerve, the selective action of any systemic poison for one isolated nerve is certainly extremely rare. The selective action of wood alcohol for the ganglion cells of the retina furnishes another example. In the case of typhoid fever some effort has been made to show that this poison has a selective action in some cases for the peroneal and ulnar nerves, and Sir James Paget is usually quoted as authority. But Sir James Paget's original communication on this subject[1] is a mere paragraph and very unsatisfactory from a neurological standpoint. Moreover, he does not mention the ulnar nerve, but only the peroneal or anterior tibial.

Measles has been reported as the cause of a peroneal type of muscular atrophy, in which the lesion is possibly a peripheral neuritis. Tooth[2] described such an affection and suggested measles as a cause, and Omerod[3] reported three cases in one family following measles. But in his case a family predisposition existed, and the cases are not entirely conclusive. I formerly reported a case of widely extended multiple neuritis following typhoid fever,[4] in which case I have since questioned whether excessive alcoholic stimulation and the cold baths may not have been largely responsible. But these cases of polyneuritis leave unexplained how in a very few cases of typhoid fever the ulnar nerve alone is involved.

That isolated paralysis of the ulnar nerve following typhoid fever is a comparatively rare affection, seems to be proved by Liepelt, who has recently gone over the whole literature and been able to find only 16 cases, to which he added a seventeenth. Liepelt studied the reports of 12 of these cases specially, and found that in 9 cases the paralysis began during convalescence from the fever. Pain was an early symptom in 8 cases, and the electrical irritability was diminished in 11 cases. Atrophy was present in 9, and sensation was involved in most of them. In 3 cases the patients recovered and 3 improved.[5]

The case which I desire to report is as follows:

H. F. L.; white, male; aged 29 years, was admitted into the Methodist Hospital as a private patient of Dr. T. L. Coley's in May last. The diagnosis was clearly typhoid fever, and the case pursued a very severe course. Not to go into minute details, which are not essential here, it is enough to say that hyperpyrexia with extreme prostration was a marked feature of the case, and that the patient suffered several alarming hemorrhages from the bowels. The duration of the attack, as shown by the dates of admission to and discharge from the hospital, was about nine weeks, which included a relapse. When the patient was at his worst I saw him in consultation at Dr. Coley's request. At that time the case presented a very grave aspect; the patient was profoundly unconscious, with extreme jactitation of the muscles (subsultus tendinum) and a pulse ranging as high as 144. About that time the hyperpyrexia was at its highest. On one occasion the temperature rose to $106^{2}/_{5}^{\circ}$ F., and for a period of about fourteen hours it was continuously above 105° F. During this crisis the patient was kept up with full doses of whisky, and during the course of the fever he was either sponged or plunged *secundum artem*.

After his discharge from the hospital convalescent nothing was reported amiss by him until some weeks later, when he turned up again with distinct paralysis of his right ulnar nerve. Dr. Coley is quite sure that the patient did not complain of this affection before he was discharged. He himself says that he first noticed the symptoms before he left the hospital, and that these first symptoms were weakness and wasting, but that he had little if any pain either at that time or later. His condition on Dec. 22, 1903, was as follows:

Motor.—There is marked weakening of the grip, and a tendency on flexion at the wrist for the hand to bend toward the radial side. There is partial loss of adduction of the thumb, shown by inability to touch the base of the little finger with the tip of the thumb. There is inability to separate the fingers, with almost total paralysis of the little finger. There is also an approximation to that condition called by the French the *main en griffe*, but this curiously is seen only in the little finger. All these paralyses are exactly such as we should expect from paralysis of the ulnar nerve. That nerve supplies first the ulnar flexor of the wrist—hence the deviation in flexing

the wrist. Next it supplies the inner part of the deep flexor of the fingers—hence an enfeeblement of the grip. It also supplies the interosseous and two inner lumbrical muscles, the actions of which are essential in the finer movements of the small joints, and which muscles flex the first phalanges and extend the second and third phalanges. Hence the tendency to *main en griffe*, which consists in over-extension of the first

Fig. 1.

Paralysis of the ulnar nerve following typhoid fever.

phalanges and flexion of the last two small bones. It also supplies the adductor of the thumb, hence the restriction of motion in that member; and finally it supplies the three small muscles that give flexibility to the little finger, hence the limitation in range of that member. As the two outer lumbrical muscles are not supplied by the ulnar, but by the median nerve, the tendency to *main en griffe* is more marked on the ulnar side of the hand, as is the case very markedly in this patient; in fact, the little finger alone has assumed that position.

The Electrical Reactions.—To faradism the irritability is practically abolished in all the affected muscles. By picking out the motor points and comparing with the sound side it is possible in this case to demonstrate beautifully that the flexor profundus digitorum is partly impaired and the flexor carpi ulnaris entirely so. The essential muscles of the hand are much involved; neither the interossei nor lumbricales contract to the current. This is also true of the adductor of the thumb and of the three muscles (flexor, abductor and opponens of the little finger) none of which responds to faradism. The current, in fact, reveals clearly the extent of the damage.

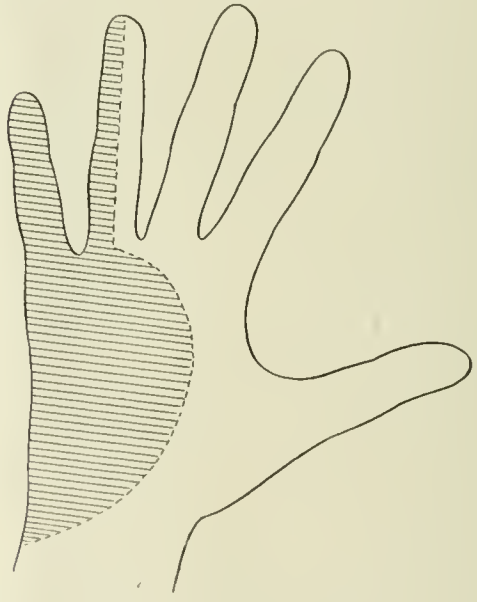
Atrophy.—All the paralysed muscles are much wasted, giving the hand a very characteristic appearance, due especially to the wasting in the interosseous spaces and in the thenar and hypothenar eminences. The flexor carpi ulnaris is also flattened.

Sensation.—There is very marked anesthesia, and this follows the classical lines, as in the diagram. It is complete, however, both to faradism and to touch only on the fingers—the whole of the little finger and the inner half of the ring finger. On the palm there is no tactile anesthesia—answers are correctly made, but to faradism there is still diminution. Thus faradic and tactile anesthesias are not coextensive. It is rather curious that the patient asserts that there is some numbness on the *back* of the hand to the faradic current, but this is probably because the current is so readily transmitted through the whole thickness of the hand that he confuses the anesthesia due to the ulnar and locates it on the dorsum. Tactile sensation is perfect on the back of the hand.

The query arises in such a case as this: Is the lesion due to a blood poison, *i.e.*, the poison of typhoid fever, or is this, and other cases like it, merely a pressure palsy of the ulnar nerve occurring during the delirium and unconsciousness of profound typhoid intoxication?

I believe that the latter theory is the correct one. When we consider the chances that the arm

Fig. 2.



Anesthesia in a case of paralysis of the ulnar nerve following typhoid fever.

of an unconscious patient may be thus injured by pressure, or by the necessary manipulations in giving him the plunge baths, we must at least acknowledge the probability of such an origin—and this theory is in accord with the fact that all isolated paralyses of the ulnar nerve are, as I have shown, clearly due to trauma or some local lesion.

The second case is one of pressure palsy of the ulnar nerve, and is not unlike the case, already re-

ferred to, which was observed by Ballet, in a glass-worker. It illustrates several points, among them the insidious onset and gradual course, so that the patient did not recognize its true cause; and, second, the absence of involvement of the sensory neurons. This latter observation is in accord with a well known law in neuropathology.

B. M.; 20; white, male; clerk. For a year and a half the patient has been employed as a

Fig. 3.

Paralysis of the ulnar nerve caused by occupation.

clerk in the Pennsylvania Railroad. During all that time he has been writing steadily, and has acquired the habit of leaning on his left forearm, which he places on the sharp edge of the desk. The arm is held in such a position that the edge of the desk is pressed hard and deeply into the ulnar side of the forearm just below the elbow-joint. The point of greatest pressure is about one and a half inches below the inner condyle of the humerus, and just where it is possible to make direct pressure on the nerve after it has passed beneath this condyle and before it becomes covered by the muscular masses of the forearm.

The first symptoms noticed by the patient were slight tingling in the region of the crazy bone, and the beginning wasting of the intrinsic muscles of the hand. He has never had pain in the nerve, nor is there the slightest degree of anesthesia. This latter point has been most carefully tested.

The condition at present is as follows: The wasting is very marked in the interosseous spaces, and in the thenar and hypothenar regions. The power of adduction in the thumb is still preserved to some extent, but the power of the three small muscles of the little finger is lost as is also the power of separating the fingers. Flexion at the wrist is well preserved. There is a slight tendency to the position of the *main en griffe* in the little and ring fingers, but no fibrillation.

The points of chief interest in this case, as already pointed out, are the fact that the pressure has been long continued, and that therefore the symptoms have been of very gradual onset, and are not yet complete. The absence of anesthesia, with the presence of marked wasting, shows how in cases in which the cause acts gradually the sensory filaments may entirely escape.

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APPARATUS FOR NITROUS OXIDE-ETHER ANESTHESIA.

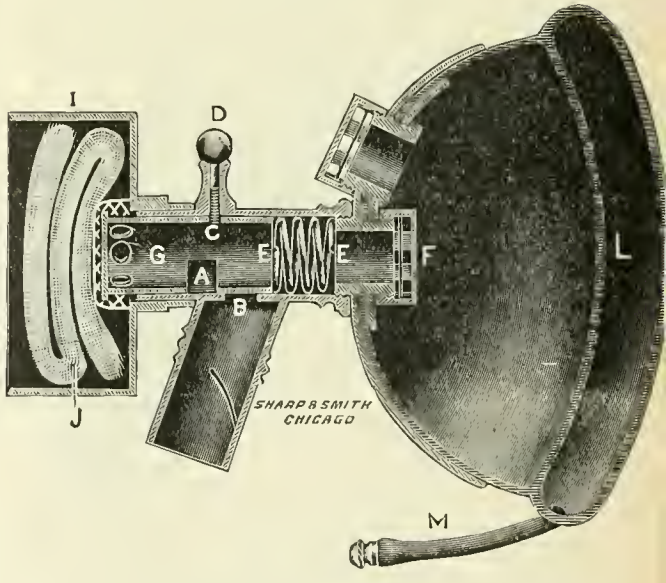
BY WELLER VAN HOOK, M.D.,
OF CHICAGO.

THE advantages gained by preceding ether anesthesia with nitrous oxide are numerous and striking. The patient goes to sleep in from one to three minutes, the beginning of the anesthesia is not unpleasant to the patient, and the total amount of ether required for anesthesia is much diminished. The writer was first impressed by the value of this method when he saw it used in the London hospitals, in 1895.

For some time the writer has used this method in his clinical work as well as in private practice, largely with the skilled assistance of Dr. D. H. Galloway. And the desire to obtain a very simple apparatus has induced him to devise an attachment for an ordinary nitrous oxide face-piece, so that the vapor can be substituted for nitrous-oxide gas at will.

Fig. 1 represents the face-piece in common use, invented by W. W. Harrington, of Carrollton,

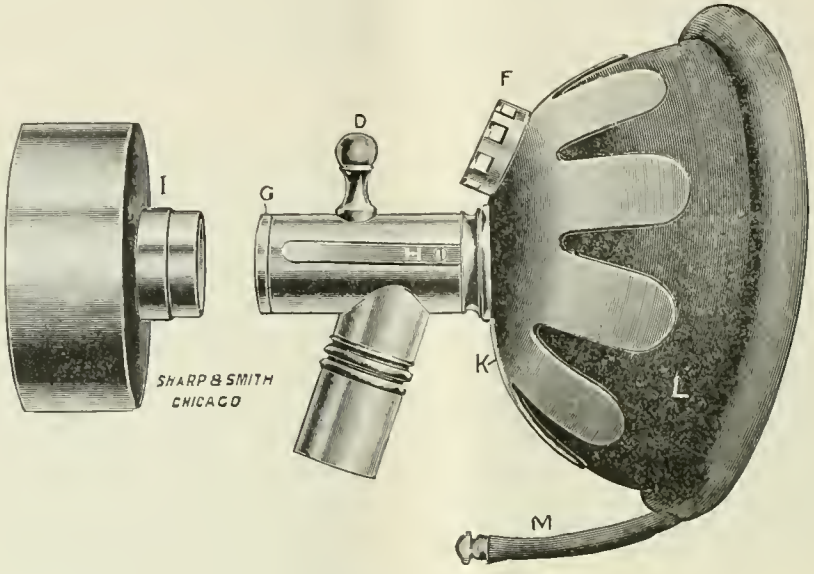
Fig. 1.



Ohio. The slide *G* when drawn out allows the patient to breathe air through the apparatus, but when pressed home and held by the spring *H*, the patient breathes nitrous oxide from the bag. The expired air and gas are forced out through the valve *F*. An assistant stands ready to turn on

more gas from the tank so that the bag may be kept as nearly full as desired.. When the patient is asleep, which requires about sixty seconds, the cap *I* is slipped over the valve *G*. Ether vapor is

Fig. 2.



then inhaled by the patient, the gauze *J* having been previously saturated.

In practical use, all preparations having been made, the bag filled, and the assistant being ready to turn on more gas as needed, the patient is allowed to breathe air a few times through the

any time until the patient has been under the influence of ether for several minutes.

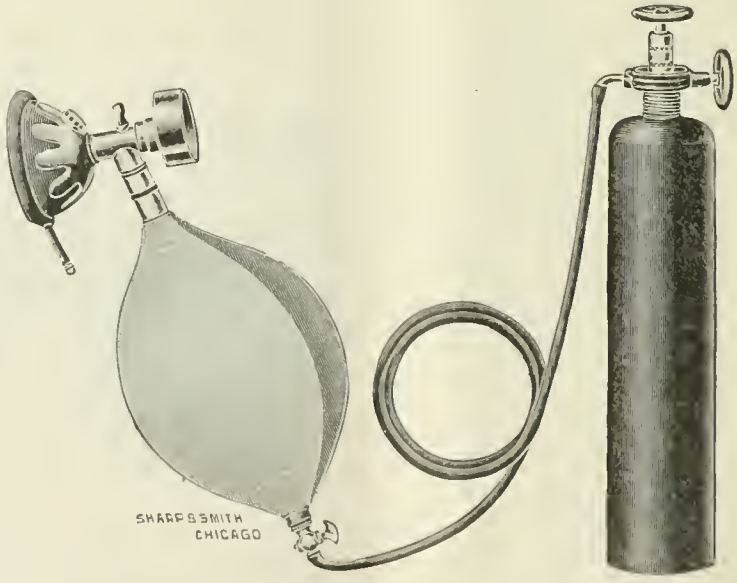
An extensive experience with this apparatus has given me confidence in its simplicity and use-

fulness. By using the 25-gallon tanks of liquid nitrous oxide the anesthetizer can transport the apparatus without prohibitory discomfort.

The following is a technical description of the apparatus:

Fig. 1 shows the external view and internal con-

Fig. 3.



valve *G*. When the gas is turned on the patient is informed of the fact. After he has breathed a few times through the ether cap, and respiratory reflexes are abolished, the ordinary ether cone may be substituted for the apparatus. It is most important that air should not be admitted at

struction. An opening, *B*, underneath the body of the inhaler, admits the nitrous oxide gas through a similar opening. *A*, in the sliding tube *G*, fitting inside of and projecting beyond the rear portion of the main body. The projecting portion is perforated for the admission of ether by the slipping

on of the container *I* which liberates the sliding tube *G* by lifting the spring catch *H*, at the same time closing the inlet *B* and shutting off the flow of gas. The sliding tube is prevented from rotating by the screw-pin *D*, which works in slot *C*. The inhaling and exhaling valves—the former internal, the latter external—consist of two thin disks of mica, *FF*, which are enclosed in open circular cages. The inhaling valve is opened in respiration by being drawn against the front of the cage, the exhaling valve being closed by the pressure of the outside air. In expiration both disks are thrown against the further ends of the cages, opening the exhaling and closing the inhaling.

The soft rubber face-piece consists of a hood, *L*, with an inflatable edge cushion attached to a metal frame, *K*, which is screwed on to the inhaler. The frame which preserves the shape of the hood may be readily detached for cleansing by unscrewing the nut which holds it to the neck of the inhaler. The cushion is inflated through the nipple *M*. The best adaptation to the face is obtained when it is partially distended.

The pure gum gas-bag with stop-cock, connecting hose and steel cylinder (Fig. 3), completes the apparatus.

A BRIEF REPORT OF FOUR YEARS OF GENITO-URINARY WORK IN THE SECOND SURGICAL DIVISION OF MOUNT SINAI HOSPITAL.*

BY HOWARD LILIENTHAL, M.D.,
OF NEW YORK.

ON the first of December, 1899, the surgical side of Mt. Sinai Hospital was divided into two separate, equal continuous services. The following is a report of what is known as the Second Surgical Division, of which the writer is the attending surgeon and Dr. Joseph Wiener, Jr., and Dr. Charles A. Elsberg, adjunct attending surgeons. This report must of necessity be extremely brief because although the genito-urinary portion of the work has been only about eight per cent. of the total surgical work of the division, yet the number of cases is so great that in spite of their extremely interesting character there is room for only the most superficial discussion. It is our custom, however, to publish in the volume known as Mt. Sinai Hospital Reports every case resulting in death or failure, while only the most interesting or atypical cases among the successful ones are printed in detail. All histories in the present paper are from the year just finished and ending December 1, 1903, those of the other years having been published as stated.

The service is a continuous one, the attending surgeon and both of the adjunct surgeons being on duty the entire year, with the exception of vacation when one man at a time may be absent. A daily visit to each patient is made by the attending surgeon and one adjunct surgeon whose work it also is to attend certain cases of emergency when it is not possible for his superior to be present. The other adjunct surgeon is present on regular operating days to assist or operate as the attending surgeon may require. The adjuncts alternate in their duties every three months.

The total number of genito-urinary operations in the four years was 186 of which 23 were followed sooner or later by death before discharge from the hospital; an apparent mortality of 12.3 per cent. or about 2.3 per cent. higher than the total mortality of the division. In considering this mortality rate it is but fair to say that it has been very decidedly influenced by the fact that patients are rarely discharged from the hospital before the termination of the case. If an operation for malignant disease has been undertaken, for example, unless the wound heals and a local cure has been accomplished the patient is usually permitted to remain until the end, often a matter of weeks or months after the operative recovery.

DISEASES OF THE KIDNEYS.

Disease.	Operation.	Total.	Died.	Total, 1903.	Died, 1903.
Cyst of the Kidney	Nephrotomy (transperitoneal)	1	1	1	1
Calculus in One Ureter	Nephrotomy	2	1	1	0
Calculus hydronephrosis. Stones in both ureters	Nephrotomy	1	1	1	1
Pyelonephritis	Nephrotomy	3	1	0	0
Pyonephrosis	Nephrotomy	4	1	0	0
Suspected Calculus	Nephrotomy	2	0	0	0
Chronic Nephritis	Nephrotomy	2	1	0	0
Acute Nephritis	Nephrotomy	1	1	0	0
Septic Nephritis	Nephrotomy	1	1	0	0
Hemorrhagic Nephritis	Nephrotomy	1	1	0	0
		18	9	3	2
Pyonephrosis	Nephrectomy	8	3	3	2
Hydronephrosis, Congenital	Nephrectomy	1	0	0	0
Tuberculous Nephritis	Nephrectomy	1	0	0	0
Pyelonephritis	Nephrectomy	2	0	0	0
Septic Nephritis	Nephrectomy	1	0	0	0
Abscesses of Kidney, Multiple	Nephrectomy	1	0	1	0
Sinus after Removal of Calculus	Nephrectomy	1	0	1	0
Torsion of Pedicle of Kidney	Nephrectomy	1	0	1	0
Sarcoma	Nephrectomy	1	1	0	0
Hypernephroma	Nephrectomy	6	3	2	1
		23	7	8	3
Perinephric Abscess	Incision and Drainage	4	0	1	0
Surgical Kidney, Uremia	No operation	1	1	1	1
Pyelonephritis, Gonorrheal	No operation	1	0	1	0
Renal Colic	No operation	1	0	1	0
		3	1	3	1

*Read before the Genito-Urinary Section of the New York Academy of Medicine on January 20, 1904.

During the year ending December, 1903, there were 51 operations with seven deaths.

At first sight these figures would seem to indicate that an incision into the kidney must be more dangerous than the total removal of the organ. This has not been our experience, however, considering the different conditions for which operation was undertaken. Thus, two deaths following nephrotomy for impacted ureteral calculi were evidently due to anuria present before operation and not relieved by it. Deaths following nephrotomy for acute and chronic nephritis, septic nephritis and hemorrhagic nephritis are also to be expected in the majority of cases.

The oblique incision parallel with the ribs is the one usually employed by us. After a simple nephrotomy the wound in the kidney is partially closed with catgut sutures, a drainage tube being carried down to the pelvis through the parenchyma between the sutures.

A table devised by the writer has been found very serviceable in operations about the kidney, a smooth slightly convex metal rest being so placed that when the patient lies upon his side he can be raised by means of a crank into the proper position. When the operation has been completed, but before the wound is closed, the patient may be slowly let down while the incision is held open with retractors thus fully exposing the depths. Hemorrhage which may appear on release of tension as the body assumes its normal position will be seen at once and can be controlled with ease.

Cystoscopy and ureteral catheterization are practised in nearly every case of suspected renal disease, but it is our opinion that catheterization of the supposedly healthy side may do harm, and it is seldom if ever performed. The X-ray has rarely been of material assistance in determining the absence of calculi.

A history of the fatal nephrotomy in 1903 is as follows:

Case I.—Anuria; Stones in both Ureters; Nephrotomy; Uretero-lithotomy; Renal Decapsulation; Death.

Louis W., sixty-five years old, was admitted to the medical side of the hospital on September 3, 1903, for an illness which had begun ten days before, with severe left renal colic lasting five days and accompanied by dysuria with pain at the end of the penis. For the forty-eight hours previous to admission there had been complete suppression. There had been vomiting but no other uremic symptom. Two hours after admission a catheter was passed and two drops of urine were withdrawn. The microscope showed epithelial cells apparently from bladder and urethra but no renal elements. Treatment was instituted with salts, calomel, hot air bath, pilocarpin and subcutaneous infusion. This proving unsuccessful the patient was transferred the same day to the surgical side where under chloroform anesthesia Dr. Elsberg operated, decapsulating the right kidney and performing ureterotomy for a stone felt in the ureter of the left side. The ureteral opening was sutured, but a large tube was left in the renal pelvis passing through the substance of the kidney which had been previously incised with the hope of extracting the calculus by that route.

Pathological report of a section of the left kidney by Dr. Mandlebaum showed an acute inflammation upon a chronic nephritis. Except for the secretion of a urinous discharge into the packings of both wounds there was no relief. No urine was passed by the natural channel and the patient died four days after the operation.

Autopsy, by Dr. Mandlebaum, showed suppuration of the wounds with pyelitis and chronic nephritis. No peritonitis. Three small stones completely blocked the left ureter about 12 inches from the renal pelvis, and there was no marked change in the ureter at point of impaction.

The following unusual case was not diagnosticated even on operation and things were only cleared up at autopsy, cyst of the pancreas having been suspected.

Case II.—Cyst of the Kidney; Transperitoneal Incision and Drainage; Death.

J. S., fifty-five years old, was admitted July 26, 1903. He was a Russian, but had been living in Roumania, near the border, where swelling of the liver was a common complaint among the population. At home he had kept from two to five dogs about the house with which he and his family were in intimate contact. Syphilis and gonorrhea were denied. He said that he had had a swelling in his abdomen for months which gradually increased in size and that there had been an occasional lancinating pain relieved by hot applications or a bath. Four or five weeks before admission he had complained of severe pain in the mass, not radiating, and of local tenderness which had never been present before. There had been nausea and occasional vomiting. There had been neither fever nor chills. The bowels had been regular. There had been no urinary symptoms.

On examination there was a marked flatness in the fourth space in the midclavicular line, in the sixth space in the midaxillary and in the eighth space posteriorly. The lower border of the liver was palpable in the midclavicular line, 7 cm. below the free border of the ribs. On the left side 5 cm. below the free border of the ribs the liver was also palpable. There was no tenderness. Extending 18 cm. below the free border of the ribs within 4 cm. of the anterior superior spine of the ilium, and extending across the median line at its lower pole for 7 cm. and palpable 12 cm. below the free border on the left side there was a movable, irregular mass. About the center of this mass on the right side there was a smooth round prominence about 6 cm. in diameter, elevating the skin and acutely tender. The mass extended far back into the loin, dense, apparently fluctuating, and moving with respiration. A vibratory thrill could at times be made out. A cousin of this patient

had been operated upon by the writer some months before for echinococcus cyst of the liver.

Operation in the present case was done by Dr. Elsberg on July 28 under chloroform anesthesia. An incision about four inches long was made through the right rectus and extended upward and downward for a considerable distance. When the peritoneal cavity was opened a small amount of clear fluid escaped and a large cystic tumor moving freely with respiration and retroperitoneal in situation was seen. It was evidently not connected with the liver although it extended high up under its lower surface. The tumor consisted of a number of cysts many of which were opened, the contents being allowed to escape. As much of the walls as possible of the largest cysts was extirpated; the entire bulk removed being as large as a child's head. The edges of what remained of the tumor were sewn to the peritoneum. An attempt was made to empty the larger completely by wiping out with towels. During this procedure a mass was found in the right lumbar region. This was removed and proved to be a large calculus. The cavity of the cyst could not be entirely emptied and was packed with gauze. In one of the other cysts there was a small calculus the size of a pea. Mikulicz tampon and dressing were applied with suture of part of the wound. On the seventh day after the operation the cutaneous sutures were removed and on the eighth day the greater part of the wound was found wide open and the intestines exposed. Attempts were made to protect the general peritoneal cavity but without avail and the patient died on August 8.

The pathological report from the autopsy by Dr. Libman revealed a calculous hydronephrosis, general purulent peritonitis and infection of the sac wall. The fluid from the cyst showed serum, jaundiced, turbid, alkaline and of a specific gravity of 1.020. The fluid contained mucin, serum albumin and serum globulin, and gave a very strong peptone reaction. No sugar, no parapeptone, paramucin, ferments, or diastase. The microscopical examination showed many leucocytes, many red blood cells, few leucin crystals, no tyrosin or cholesterin and a faint trace of urea. The sac proved to be a hydronephrosis and showed no remnants of kidney tissue. It was adherent to the liver and head of the pancreas. The wall was trabeculated. The pancreas was negative. The left kidney showed evidences of parenchymatous degeneration.

Nephrectomy is performed by us as a primary procedure in cases of new growth, and in calculous disease when there are numerous stones scattered throughout the organ. A case of primary removal of the kidney for the rare condition of torsion of its pedicle appears on the list of recoveries. In cases of renal tuberculosis with great destruction of tissue primary nephrectomy has usually been done, but in other suppurative cases nephrotomy as a general thing has preceded removal. This gives the patient an opportunity to recover from the effects of sepsis due to bad drainage, so that his condition is more favorable for the severer operation. A kidney, too, which has been found greatly enlarged at the primary nephrotomy has not infrequently shrunk to one-third of its former size before the secondary nephrectomy. Another advantage in the two stage operation is that one may judge much better of the functionating power of the other kidney.

There were six cases of hypernephroma during the four years, intermittent hematuria being the prominent symptom in all. Secondary growths of this type, usually peritheliomatous, are apt to appear in the bones and in the liver. They often pulsate very strongly and in one case the tumor occurring, as it did, in the frontal region, exactly simulated an aneurism, pulsating with all the throbbing sensation of a true arterial dilatation.

Case III.—Stone in Ureter; Nephrolithotomy; Nephrectomy; Cure.

Max K., fifty-one years old, was admitted to the hospital on August 17, 1903, having suffered pain in the left lumbar region for one year. The history of his present illness covered five days. There had been acute onset, with lancinating pain, beginning posteriorly and radiating down the course of the ureter to the scrotum and penis. The attack had been accompanied by vomiting. There had been a chill at the onset, followed by fever. Urination frequent but scanty. When examined there was marked tenderness over the region of the left kidney and along the course of its ureter.

On August 18 Dr. Wiener operated under chloroform anesthesia. The kidney was exposed by the usual incision and was delivered with some difficulty. Palpation revealed a stone at the beginning of the ureter apparently impacted therein. An assistant compressing the renal vessels, an incision was made longitudinally into the kidney and through its cortex. The stone was felt at the mouth of the ureter. In attempting to extract it about one-half an inch of the ureter was torn away with it. No other stone could be found. During the course of manipulation the pelvis of the kidney was opened on its posterior aspect. An attempt was made to find the open end of the ureter with the idea of implanting it into the pelvis but it could not be found. The hole in the pelvis was sutured with catgut and the kidney sewn together with interrupted catgut sutures. The patient made a good recovery from the operation but the urinary fistula refused to close and, on October 13, the writer performed nephrectomy. The kidney was extremely adherent to the surrounding tissues and was delivered with great difficulty. It had contracted to about one-half its former size, and contained a marked amount of connective tissue. Convalescence was uneventful and the patient was discharged well, on November 28.

Case IV.—Perithelioma of the Kidney; Nephrectomy; Cure.

S. H., woman, fifty years old, was admitted on November 5, 1902. She was

married and had had six children and one abortion, her menopause having occurred one and a half years before admission. For three months she had noticed a marked loss of weight and general weakness without pain. There had been some difficulty in passing urine about four weeks before admission and the urination was accompanied by the passage of bright red blood and, for two days following, the urine was very dark in color. On two subsequent occasions she had passed old clots. One week before admission she had noticed a tumor in the left side of the abdomen. There were no disturbances of the bowels and no subjective symptoms by which the tumor could be localized. On admission she was found to be quite anemic and rather poorly nourished. The general physical examination was negative, but on reaching the abdomen a marked asymmetry was noted due to a huge tumor in the left flank reaching to the median line. This mass was fairly elliptical in shape and the long axis ran downward and inward. It had rounded edges and its surface was somewhat lobulated. It seemed to extend above the free border of the ribs. Posteriorly it went deeply into the lumbar region. It was readily balloted. Internally the mass reached well beyond the median line, the lower limit corresponding to the iliac crest. The colon was pushed inward. No intestine was felt in front of the tumor. The consistency of the tumor seemed solid and very hard.

On November 8, 1902, an oblique lumbar incision parallel with the ribs was made by the writer. It was found possible to push the peritoneum forward and deliver and remove the tumor together with the kidney, of which it formed a part. Partial suturing was done with silkworm gut and the immense cavity previously occupied by the tumor was filled with a Mikulicz tampon. The growth was the size of a large cocoanut, the surface irregularly nodular and its general consistency was much softer than was suspected from examination before the operation. There were numerous scattered cysts. The tumor mass on section had the characteristic yellowish granular appearances of hypernephroma. The growth seemed to spring from the entire convexity of the kidney. The pathological report by Dr. F. S. Mandlebaum showed perithelioma with necrosis. Convalescence was absolutely uneventful except that the silk ligature that had been used to ligate the pedicle *en masse* was rather slow to be given off. It came away January 7, 1903, two months after the operation and the patient was discharged well ten days later.

On November, 1903, no local recurrence but a pulsating tumor the size of a pigeon's egg was found in the left frontal region, having apparently eroded the bone over an area nearly as large as a silver quarter of a dollar. A full report of this case will be presented at its conclusion, but it should be here mentioned that incision and thorough curetting after ligation of the left common carotid showed the tumor to be a metastatic perithelioma.

Case V.—Hypernephroma; Nephrectomy; Death.

David S., fifty-two years old, entered the hospital on September 23, 1903. Had lost about 50 pounds in weight during the previous seven months. Had had frequent micturition with intermittent hematuria, considerable blood having been lost. On admission a large balottable somewhat irregular reniform mass was found in the left renal region, extending to within two inches of the median line. Left testicle somewhat enlarged. Operation September 26, by Dr. Wiener. Difficult nephrectomy owing to size of tumor and vascularity of capsule and adhesions. Peritoneum opened. The following day he died of shock and acute anemia. The specimen was of the size of an adult head. It had broken down into the renal pelvis. There was no autopsy.

Two histories of pyemic kidney abscesses follow. The complication of malignant diabetes contributed to the fatal termination in the second case.

Case VI.—Abscesses of Kidney; Nephrectomy; Cure.

Thomas S., aged twenty years, was admitted December 12, 1902. He had had furunculosis for a number of weeks before the onset of his present illness. About six weeks before admission he had complained of dull pain in the left lumbar region. The pain had been relieved by pressure. He also had had rigidity and tenderness in the right epigastric region which had ceased three weeks before admission. The pain in the left lumbar region had been intermittent, and at times very slight. He had begun to notice threads in his urine for the past three weeks. In urinating he had passed clear urine at first but later it had contained threads. He had had evening rise of temperature to 102.5° F. since the onset. The pain in the left lumbar region had been sufficiently severe to demand morphine. Blood examination had shown white blood cells 24,000, red blood cells 4,336,000, hemoglobin 82 per cent. He had been treated by Dr. Manges who sent him into the hospital.

On admission his general condition was found to be fair; he was much emaciated and had the appearance of an individual suffering from chronic sepsis. In the left lumbar region there was a slight fulness, dull on percussion, painful on pressure. On December 13 under nitrous oxide gas an incision into the mass was made by the writer and a considerable quantity of pus evacuated. A body supposed to be the kidney, could be vaguely felt through the wound. Drainage by tube. On December 15 an examination of the urine for tubercle bacilli was made but none found. The symptoms were not relieved by operation, therefore, on December 18, the writer performed a secondary nephrectomy for pyonephrosis and multiple kidney abscesses under gas and ether anesthesia. The twelfth rib had to be resected. It was necessary to perform the entire operation with great rapidity owing to the wretched condition of the patient. The pedicle

was clamped and tied off with heavy silk. The peritoneum was not injured. The kidney measured 8 x 6 x 4 inches. The external margin consisted of the remains of openings into numerous abscesses around the kidney. The external surface was congested, the consistency of the tissues being soft and fluctuating in areas. On section the parenchyma was found completely studded with multiple abscesses varying in size from a pinhead to a walnut. The pus was thick in consistency and creamy yellow in color. Most of the abscesses had distinct walls being sharply defined from the surrounding parenchyma. The pelvis was filled with pus. Many of the abscesses had broken into the pelvis leaving large sloughing ulcerations. The parenchyma of the kidney was pale, cloudy and its markings were almost entirely obscured. It was evidently in a state of advanced parenchymatous degeneration. The capsule was thickened but not adherent. Convalescence was steady and rapid. The ligatures were off on January 1, 1903. On January 19, one month after nephrectomy, he was discharged cured and has remained absolutely well ever since. The pus contained *Staphylococcus aureus.*

Case VII.—Pyemic Kidney Abscesses; Nephrectomy; Death.

Morris S., fifty years old, had suffered amputation of the thigh for diabetic gangrene on May 10, 1903. His recovery had been ideal, primary union having occurred. On June 25, however, after an illness of ten days he was readmitted suffering from symptoms of sepsis and with pain in the region of the right kidney. The urine was clear, containing a few pus cells demonstrated by the microscope. Two per cent. of sugar still present, but acetone and diacetic acid which had been present in large quantities had disappeared.

July 4 under nitrous oxide and ether nephrectomy was performed by the writer; a somewhat enlarged kidney filled with miliary abscesses being removed. The patient rallied from the operation but died of his sepsis four days later.

Case VIII.—Movable Kidney with Twisted Pedicle; Strangulation; Nephrectomy; Cure.

Esther C., aged sixty-five years, had had a sudden onset of pain in the right iliac region seven days before admission. There was frequent vomiting of food and bile. She had been constipated for three days. There was no elevation of temperature and no chills. She had passed about 30 ounces of urine each day, the urine being cloudy with sediment containing pus and few red blood cells but no casts. Her bowels were hard to move, the stools being green and small. She was admitted December 25 having been referred to the hospital by Dr. Hauswirth. Her general condition was poor. Her tongue was dry and coated. In the right lumbar region, above the iliac spine, there was a large, rounded mass, very tender on pressure, but obscured by the rigid contraction of the abdominal wall.

Having diagnosticated an acute surgical abdominal lesion probably connected with the kidney the writer operated at once, making a lumbar incision parallel to the iliac crest and about one and a half inches above it. The mass was aspirated and a small amount of pure blood drawn into the barrel. The perirenal fat was hard, friable and adherent to the peritoneum and abdominal wall. The tumor was found to be the kidney; hard, somewhat enlarged, with its pedicle twisted. It was freed and drawn into the wound. As the number of turns and their direction could not be determined, and as the organ looked much congested, a primary nephrectomy was performed, the pedicle being ligated with heavy silk. The ureter was tied separately with catgut. Through and through chromic gut sutures were employed except at the posterior portion where the skin was strapped. The kidney was somewhat enlarged, its surface dark and covered with hemorrhages. Upon section the cortex was found to be pale, edematous, containing no pus, and showing no dilatation of the pelvis. There were radiating streaks of yellowish pigmentation in the parenchyma of the kidney, where urinary salts had been deposited. The patient developed an hypostatic pneumonia from which, however, she made a good recovery. She was discharged on January 18, the ligature not yet detached; it came away a few weeks later.

Case IX.—Tuberculous Pyonephrosis; Nephrectomy; Death.

Solomon M., thirty-four years old, was admitted March 30, 1903. The family history threw no light upon the case. Had had gonorrhea fifteen years before. About a year ago, after an illness of three weeks with pain in the back, he had been told by his physician that there was pus in his urine.

About two months before admission he had gone through another illness with pain in the left side for about three weeks, then a disappearance of this pain and the occurrence of right-sided pain. About two weeks before admission the pain again became localized in the left side, leaving the right. No other symptoms had been present. Urination normal, four or five times a day. No chills or fever. General examination soon after admission was negative but the urine contained some albumin and a heavy deposit of pus. On April 9 the left ureter was catheterized and the urine examined. It contained a trace of albumin and a considerable amount of pus. On April 21 both ureters were catheterized. The flow from the right side could be markedly influenced by pressure bimanually in the lumbar region. It contained much more pus than that from the opposite kidney and tubercle bacilli were demonstrated in the sediment. April 23 tuberculin test gave positive reaction.

Operation by the writer on April 25, under chloroform. Adhesions were very dense all about the kidney. It became necessary to resect the twelfth rib, and the pleura was accidentally injured and had to be closed by suture. Nephrectomy was done, several inches of the thick gelat-

inous ureter being removed separately. The kidney was six inches long and three and one-half inches wide. It was slightly lobulated and fluctuated in places. Section showed three large discrete necrotic abscesses with many smaller ones.

The operation was performed at about 4 p.m. and at 7 o'clock the wound had to be reopened because of hemorrhage. No single bleeding vessel could be found but from the entire surface where the adhesions had been divided there was oozing, which could not be checked by packing and the patient died of acute anemia at six the next morning. Unfortunately there was no autopsy. The writer is certain that there was no bleeding from any spurting vessel.

DISEASES OF THE BLADDER.

Disease.	Operation.	Total.	Died.	Total, 1903	Died, 1903.
Cystitis	Suprapubic Cystotomy	9	0	1	0
Cystitis	Perineal Cystotomy	1	0	0	0
Vesical Hemorrhage	Suprapubic Cystotomy	1	0	1	0
Papilloma	Suprapubic Cystotomy	6	0	1	0
Calculus	Suprapubic Cystotomy	9	0	1	0
Calculus	Litholapaxy	1	0	0	0
Tumor	Suprapubic Cystotomy	2	1	0	0
Sarcoma of Bladder and Prostate with Peritonitis	Celiotomy	1	1	0	0
Retention	Suprapubic Cystotomy	1	0	0	0
Vesical Fistula	Cauterization	1	0	1	0
		27	2	5	0
Exploratory Suprapubic Cystotomy		1	0	0	0
Suprapubic Cystotomy in the Course of other operations		2	0	0	0
		3	0	0	0

It will be seen that there were 30 operations upon the bladder, in the four years, with two deaths, both in cases of malignant disease. During the year ending December 1, 1903, there were five operations without a death. But one of the cases operated upon during this year need be here reported in detail. The history follows:

Case X.—Vesical Calculus; Epicystotomy; Cure.

William N., aged eighty-two years, had been discharged after suprapubic prostatectomy performed on March 24, by Dr. Wiener. He was readmitted on October 9 with cystitis and frequent burning urination which had existed for about six weeks. On examination with a sound, which passed easily, a stone was discovered. On October 13 suprapubic cystotomy under nitrous oxide gas was done by the writer and a number of phosphatic calculi, about the size of large date seeds, were removed. It was then learned that, following the former operation, the nurse had for some reason neglected the irrigation of the bladder. On dissolving the calcareous matter of the stones with strong hydrochloric acid, nuclei consisting of bits of tough tissue were left. Convalescence was good and the patient was discharged entirely well on November 14.

DISEASES OF THE PROSTATE.

Disease.	Operation.	Total.	Died.	Total, 1903.	Died, 1903.
Abscess	Perineal Incision	6	0	0	0
Hypertrophy	Suprapubic Prostatectomy.	17	0	6	0
Hypertrophy	Prostatotomy (Bottini)	1	1	0	0
Carcinoma	Suprapubic Curetting	2	1	0	0
		26	2	6	0
Hypertrophy of Prostate. Urinary Sepsis	No operation	3	3	2	2

The total number of operations upon the prostate since December, 1889 was 26, and there were but two deaths; one after a suprapubic curetting for advanced carcinoma and the other, strangely enough, following a Bottini's galvanocaustic prostatotomy. In the last year there were but six operations upon the prostate and none of the patients died. All were suprapubic prostatectomies. We find the records of 17 of these operations during the four years and none of the patients died, all but one making perfect recoveries. The case which did not turn out well will be here reported.

(To be Continued.)

VESICAL RETENTION OF URINE.[1]

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The single symptom of inability to entirely void the bladder contents, is so dispersed in literature that, when its prompt relief is imperatively demanded, text-book consultation is out of the question. The purpose of the present paper is to summarize the treatment of the symptom, with only so much allusion to its etiological factors as is necessary to decide upon the methods to be employed to relieve the emergency. The ends in view may be best subserved by first reciting the means ordinarily used.

Common Domestic Treatment.—In retention from any cause, provided that danger to life is not imminent, and provided also that the patient is

[1] Read before the Second Annual Meeting of the American Urological Association, New Orleans.

not too unmanageable for temporization (as during alcoholic inebriety) the ordinary domestic inciters to urination may prove successful. They are: (*a*) Exposing the patient to the sound of running water; (*b*) causing him to suddenly plunge one or both hands into cold water; (*c*) prolonged hot sitz-baths or general baths (*quod vide infra*).

If within fifteen minutes these fail, recourse must at once be had to catheterism. If consent to catheterize without general anesthesia is not obtainable, this must be employed.

Not infrequently the production of the emergency instruments induces a tendency to syncope, especially if glittering metal catheters are among them, and if these are not too noiselessly placed into the pan for resterilization, the promptly saturated condition of garments or bed will then show that the patient has been spared instrumental intervention.

Hot Baths.—When a patient cannot urinate, a prolonged hot hip or general bath suffices, in many cases, to overcome the retention. In all it gives time to inquire into its cause and to prepare for treatment. Furthermore, as all retentions resting upon disturbances of the urinary apparatus are aggravated by local congestion, the hot bath is useful in equalizing the circulation and thus tending to reduce the local congestion. Even if this is not sufficiently overcome to enable the patient to void urine, subsequent treatment will be easier in consequence.

The ten or fifteen minutes that the patient spends in the bath also give ample opportunity to prepare the instruments to evacuate the bladder, should they be required. At the same time the history of the case may be obtained and such physical examinations made as may be necessary. Among these, bimanual palpation, with one finger in the rectum and the fingers of the other hand on the prevesical region, will determine whether an enlarged prostate is at least a contributing cause of the retention. Experience in the rectal touch enables the practitioner also to very closely estimate the amount of urine retained in the bladder. This offers a most valuable means of differentiation, for if bimanual palpation shows the bladder to be empty, the absence of urination is not due to vesical retention, but to renal or ureteral retention, or anuria.

The bath, the examinations, the preparation of instruments often have decided psychic advantages. They appeal to the patient as active procedures directed to the relief of his distress. His quite natural anxiety and irritability are very much appeased and he is rendered a coadjutor in the manipulative measures that thereafter may be needed.

Obviously, however, if the physician is called when the retention menaces rupture of the bladder or urethra, immediate instrumental intervention is necessary, without the delay that the bath entails.

When the retention is due to general systemic disease (*e.g.*, typhoid fever, locomotor ataxia) it must be relieved by catheterism, although the hot bath may be of service incidentally.

Diuretics and Diluents.—Anything that increases the secretion of urine can but aggravate overdistention of the bladder. Therefore, diuretics and diluents are distinctly contraindicated in retention of urine.

Antispasmodics.—No retention of urine is ever caused by vesical spasm. Spasm of the compressor, however, can evoke temporary retention. But this retention is so brief that it subsides before any drug can take effect. It merits mention, if only to warn against the employment of antispasmodics to combat it.

Opiates.—These cannot affect a urinary retention, no matter what its cause. They may, however, retard the secretion of urine as they diminish all secretions, and thus delay the ever-increasing distention of acute retention. At the same time they must necessarily reduce the reflexes which are the essential stimuli to micturition. The caution with which they must be employed is, therefore, self-evident.

General Anesthesia may be serviceable under the exceptional circumstance of a hot bath being unobtainable. However, when complete retention is due to an obstruction (stricture, prostatism, a foreign body or growth) general anesthesia avails nothing, as it cannot reduce the obstruction. Neither can an anesthetic at all influence the pelvic congestion which may, when even a minor obstruction exists, precipitate a retention.

Other Devices.—The practitioner's ingenuity will oftentimes overcome an emergent retention. The senior writer of this paper recalls in connection herewith, a heavily strictured negro, who, after each alcoholic or sexual debauch, had retention. This patient had been taught by a physician, whose name he had forgotten, to cut a willow twig, render it smooth, and insert it into his urethra. By pressing it against the stricture, the congestion of the region was in a short time sufficiently reduced to enable him to emit urine.

A more directly effective procedure is related by Dr. Thomas R. Evans, of Ashland, Ky., in the *Philadelphia Medical Journal* of April 4, 1903. This author, speaking of another practitioner in citing a case of retention of urine, says: "He espied a castor-oil plant. The leaf of this plant gives a bend to the stalk like the curve of the male catheter. Its caliber, the fact that it is hollow, its ease of lubrication by slightly scraping it, and its comparative toughness all rendered it a natural catheter." Quotation of these instances is in no manner intended to recommend them as substitutes for careful, methodical, aseptic procedures. But when danger from the emergency is imminent and no proper means at hand to avert it aseptically, the risk of infection must be incurred to avert the more immediate menace.

Capital Surgical Intervention.—Whatever the condition that produced the retention of urine, major operation is only exceptionally required to meet the emergency. While in some cases capital operative measures may be needed to cure the

basic condition, the urgent symptom can in the vast majority of instances be relieved without life-endangering procedures.

Non-Operative Intervention.—The period for which a retention has persisted is no guide to the need of instrumental ingression. In some cases the alarm created by the inability to urinate is so great as to cause the secretion of immense quantities of hysterical urine, still further dilating the distended bladder, and consequently still further increasing the distress. Palpation and percussion, in many cases mere inspection, reveal an immensely dilated bladder, extending far above the pelvis and apparently on the verge of rupture. Rupture of the bladder, however, occurs but rarely, and can always be prevented by an operator who is prepared for the emergency. The preparation is so simple that even the youngest general practitioner who will observe the ordinary rules of asepsis, can carry to a successful issue every case, even when the most alarming symptoms present.

In order to render of practical value any effort to set forth the various modes of treatment of vesical retention that most uniformly prove successful, it must embody a consideration of the causes of retention. These are often so interlaced that any classification would be but artificial and hence non-conducive to an intelligent grasp of the subject. It seems better, therefore, to recite the conditions that may produce the symptom, in the order of their gravity.

1. *Retention Complicating General Diseases.*—Osler[1] says: "Retention of urine is an early symptom (of typhoid fever) and may be the cause of abdominal pain. It may recur throughout the attack." The same authority, in discussing locomotor ataxia, states: "The first warning of the disease which the patient has may be a certain difficulty in emptying the bladder."

2. *Simulated Retention.*—Some miserable creatures of both sexes feign retention of urine for the masturbatory gratification which catheterism brings them. Lydston,[2] in his classical work, calls attention to this as follows: "The gynecologist is compelled to be on his guard with reference to a not infrequent form of nymphomania, but one which is little suspected by those surrounding the patient, in which the woman develops a fondness for gynecological manipulations. The subterfuges and devices of such patients to induce handling of the sexual organs by the physician are often remarkable. One of the most frequent forms of this malingering is the pretence of retention of urine, although every disease that they ever heard of may be complained of by such patients in their insane endeavors to obtain manipulations at the hands of the physician."

Howe (quoted by Lydston) relates a case of this kind occurring under his observation at Bellevue Hospital:

"*Case.*—A girl, aged eighteen years, was admitted supposed to be suffering from retention of urine. She was thin, her eyes were deep-set but bright and staring, and were found filled with tears. Her statement was that she had passed no water for three days; that she was subject to these attacks and was treated by having her water drawn off. I introduced the catheter and found only a few ounces of urine in the bladder, not enough, indeed, to corroborate her history. The next morning, as she had not urinated during the night, I drew off the urine again. While doing so I noticed by a series of curious convulsive movements that she was under the influence of strong excitement. Further examination showed that the labia minora, clitoris and adjacent parts were red and swollen and bathed in a profuse mucous secretion. I then remembered that on the previous evening she had shown a somewhat similar state of excitement, and gave the nurse orders to watch her closely all day. In the evening the nurse informed me that the patient kept up a constant friction of the genitals when she supposed no one was watching, and even when eyes were on her she endeavored by uneasy movement in the bed to keep up the titillation. Knowing then what I had to deal with, the patient was given a sedative and told she must empty her bladder without assistance. For thirty-six hours subsequently she obstinately insisted on her inability to urinate. When she was told that no catheter would be employed again, there was no further retention. Soon after she left the hospital, I learned that a physician friend of mine was treating her for uterine disorder, but he, too, soon found out the true nature of the case, and advised her to get married."

"A number of cases of a similar nature have come under the author's observation, both in hospital experience and private practice."

Lydston's experience is not dissimilar from that of other specialists. The senior writer of this paper recalls a few males who used like subterfuges to the same end.

3. *Hysterical Retention of Urine.*—Detailed consideration and treatment of these cases, as those of simulated retention, belong in the domain of psychiatry.

4. *Retention from Delayed Urination.*—Only those cases in which no pathological change exists are intended to be covered under this paragraph. Some men and women, otherwise quite sensible regarding their physiological needs, will defer the act of urination in obedience to social demands, even when conveniences for relief are at hand, as in European cities. The first desire to urinate is easily controlled. Tolerance of increasing vesical distention is soon established, and for a while the desire to void the bladder ceases to assert itself. The conditions that then attract the patient's attention to any abnormality are, (*a*) a vague sensation of pelvic or abdominal discomfort; (*b*) recollection that an unusually long interval has elapsed since the last urination, or (*c*) an unsuccessful attempt to empty the bladder in obedience to habit, as before retiring.

[1] Osler. "The Principles and Practice of Medicine," Appleton, 1902.

[2] G. Frank Lydston. "Surgical Diseases of the Genito urinary Tract," F. A. Davis Co., 1899.

Ineffectual efforts to void urine under any of the above circumstances soon produce great physical and still greater mental distress. The patient unconsciously evokes the additional aid of the abdominal muscles to assist the detrusors in overcoming the compressor. The greater the efforts thus made, the more intense does the distress become. If long in this condition, the patient may appear to be on the verge of collapse, the pulse becomes small and rapid, respiration labored, the expression anxious, the skin pale and bathed with clammy sweat. In very rare cases syncope results, and when it does, the consequent muscular relaxation often allows the escape of urine. The sudden emptying of the bladder, in such an event, may be followed by hemorrhage *ex vacuo*, as is likely to occur also when retention due to other causes is too abruptly entirely relieved.

The treatment of retention due to delayed urination does not differ materially from that of retention dependent upon other causes, except that in the former, recourse to general anesthesia may be inevitable when the patient's pusillanimity precludes even touching the genitals.

5. *Retention from Excesses in Baccho et Venere.*—It occasionally happens that a person, of either sex, with normal urinary apparatus, is seized with retention of urine, while in an alcoholic or sexual debauch. The treatment of such a condition is identical with that of retention due to delayed urination (*supra*).

6. *Retention from Fear of Pain.*—Occasionally a case is seen in which the patient suppresses the desire to urinate because the preceding urination was painful to him. This ordinarily occurs with patients suffering from acute gonorrhea, who cannot be convinced that after an irrigation of the urethra, urination which previously was painful is most likely to be entirely easy and free from difficulty of any kind. A retention of this kind must be treated as retention in the beforementioned conditions.

7. *Retention Due to Stricture.*—When a urethral stricture is neglected, it generally contracts so gradually that the patient does not observe the reduction of the caliber of his stream. So, too, he fails to observe the gradual increase in the number of times he finds it necessary to empty his bladder. If uncleanly, he pays no heed to the dribbling of urine that follows micturition which, saturating the garments and macerating the epithelium of the genitals while it decomposes, may produce irritating skin eruptions. These, then, may cause him to seek advice leading to the discovery of the presence of urethral stricture. In some cases the stricture is not noticed until the patient, after an alcoholic or sexual debauch, suddenly finds himself unable to urinate. In rarer cases, without precipitating cause, the peristructural region becomes engorged until it entirely arrests normal emission of the vesical contents.

Whatever the cause that leads a stricture to prevent the extrusion of urine, the retention must be promptly conquered. This demands, primarily, every effort to traverse the urethra without the slightest injury to its mucosa. The first impulse of the inexperienced is to insert a small instrument. This is an error, because it invites the very injuries which it is essential to avoid. A fine catheter, no matter how soft, is more likely to engage in and penetrate the urethral folds or enlarged Morgagnian crypts, puncturing, tearing or producing false passages, which seriously complicate the condition. The rules to be observed are the following: (1) Wash the urethra as far as possible with hot boric acid 4 per cent. solution, or oxycyanide of mercury 1-5,000. (2) Select the largest blunt, soft rubber catheter that will pass the external meatus, lubricate it liberally with Gouley's saponic lubricant, Guyon's ointment, Synol soap, or 10 per cent. suspension of iodoform in glycerin. (3) If the catheter in its course toward the bladder is arrested, press it gently against the obstruction for a few seconds. If the obstruction does not yield to mild pressure, withdraw the catheter and select a smaller one. (4) In case three or four blunt catheters successively used prove futile, continuance of their employment is inadvisable, as they are likely to irritate and increase the urethral congestion. Therefore, it is well, at this stage, to have recourse to conical olivary woven catheters, whose high polish diminishes the risk of frictional injury of the mucosa. The same technic suggested above (3) is to be applied in the use of these catheters. (5) In case the conical olivary woven catheters also fail, several efforts may be made with the Delafosse or Phillip's rat-tail catheters. As the sudden obstruction met in the strictured region is usually soft tissue, it is most likely to yield to the very gradual increase of size of these catheters, after their fine terminals have traversed the coarctated region. (6) As soon as any of the above-mentioned instruments has entered the bladder, the urine will escape from its mouth. The relief that the patient then experiences might mislead one into allowing the entire vesical contents to escape. This would be a grave error, for two reasons (*a*) sudden evacuation of the bladder is likely to produce a serious hemorrhage *ex vacuo;* and (*b*) withdrawing the catheter after it has rested but a few moments in the strictured region, robs it of the opportunity to exercise that decongesting influence which must immediately precede the dilatations that are subsequently employed for treatment of the stricture.

Hence it is wise to relieve the bladder very gradually. This is best accomplished in the following manner: (1) Allow 60 c.c. of urine to escape. Save this for microscopical examination, so that it may be decided, as soon as possible, whether the upper urinary organs are affected. (2) With a syringe or irrigator, inject through the catheter 30 c.c. of warm 4 per cent. boric acid solution. (3) Permit 60 c.c. of the bladder contents to flow off. (4) Inject 30 c.c. of the boric acid solution. Continue the above procedure

until nothing but clear boric acid solution flows from the catheter.

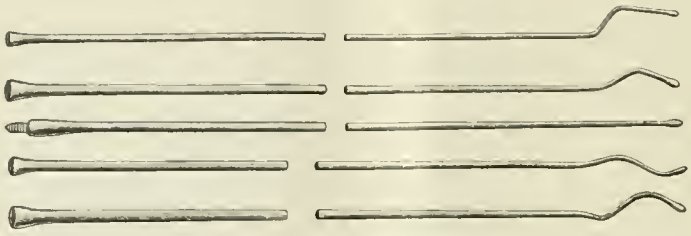
If, however, all efforts at catheterism fail, recourse must be had to filiform bougies. These are employed as follows: (1) Bend the ends of three filiforms in the shape of bayonets; bend three at various angles, and three into corkscrew terminals. Dip each one into collodion, which, on drying, maintains the instrument in the shape given it. (2) Take the penis in the left hand and, with a syringe, fill the urethra to its fullest capacity with iodoform 10 per cent. in glycerin. While holding the penis with the third, fourth and fifth left fingers against the left thenar eminence, compress the glans with the left thumb and index finger to prevent the iodoform-glycerin from escaping. (3) Insert into the urethra as many straight, angular and bayonet-shaped filiforms in equal numbers as the meatus will easily admit. Very gently guide them as far as they will go, without exercising any force whatever.

When the filiforms are arrested, select any one of them and advance it gently until it will not proceed further without the employment of more force than is required to project it. Repeat this procedure with each one of the filiforms successively until one of them has found its way through the coarctation and into the bladder. Then remove all the other filiforms and anchor this one in place according to Guyon's method, as elsewhere described.[1] (4) If the introduction of a straight, bayonet-shaped, or angular filiform is impossible, then insert a corkscrew filiform in the same manner as described above. When it has reached a spot which it will not traverse, turn it very gently to the right and left until it becomes engaged in the lumen of the stricture through which it will then readily find its way. Should it reach a point whereat its progress is definitely arrested, insert another corkscrew filiform and employ it in the same manner as the preceding one. In cases of excentric or tortuous stricture, three or four or more such filiforms may sometimes be needed.

When a filiform has traversed the stricture, even though tightly grasped by any part of the urethra, the retention is practically conquered. Drops of urine will soon begin to dribble along its sides and in from six to twenty-four hours the filiform will be found lying loosely within the stricture. A catheter can then be easily inserted. It will be well, when catheterism has become possible, to anchor fast the catheter in the same manner as the filiform was kept *in situ*, and to close its mouth with a wooden plug or spigot which may be removed at regular intervals and the bladder washed when necessary.

If examination of the urine reveals that the upper urinary organs are seriously affected, the presence of the filiform through the stricture will assist in establishing the drainage which is the condition precedent to treatment of the vesical, ureteral or renal involvement. Moreover, if rupture of the bladder, of the posterior urethra, or infection menaces the patient's life, then the filiform will serve to conduct a Gouley tunneled catheter for more rapid evacuation of the bladder or as a preliminary to internal urethrotomy or a guide to external urethrotomy.

Fig. 1.



Filiform bougies: Straight, angular, bent bayonet-shape and with cork-screw terminals.

Whenever all efforts to introduce even the finest filiform through the stricture prove unavailing *suprapubic puncture* may save the patient from a dangerous operation. This is performed by first shaving and rendering the pubis aseptic and then plunging a canula and trochar through Retzius' space into the bladder. This almost painless and safe operation may be repeated three or four times in twenty-four hours. Before each repetition, efforts should again be made to traverse the stricture as before suggested. In the vast majority of cases they will prove successful sooner or later, in consequence of the reduced congestion established by removal of the impediment which an overdistended bladder offers to return circulation.

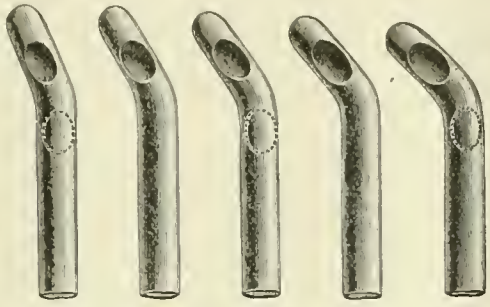
8. *Retention Due to Prostatic Enlargement.*—Prostatics are liable to retention of urine at any time, from the same causes that can produce retention in strictured patients. The symptoms of such retention are practically identical with those of retention caused by stricture. The treatment of this retention is not difficult while the bladder-contents are still aseptic. If the retention is recent, a prolonged very hot bath often procures relief without instrumentation. If, after ten or fifteen minutes of such a bath the patient cannot empty his bladder, his hips may, while he is still lying or sitting in hot water, be elevated sufficiently to expose the genitals for catheterism. The instruments most safely used are the Mercier

[1] "The Irrigation Treatment of Gonorrhea: Its Local Complications and Sequelae." Wm. Wood & Co., New York.

woven catheters as modified by Guyon. These catheters are made with their beaks bent at various angles, as shown in Fig. 2.

In the use of these prostatic catheters, the same rules obtain as given for the employment of filiforms in retention due to stricture, with the exceptions noted below: (1) If the urethra is not abnormally contracted at any point, the catheter is gently but steadily guided to the prostate. Then, together with the penis it is depressed between the thighs, so as to cause the catheter's beak to surmount the elevation of the prostate.

Fig. 2.



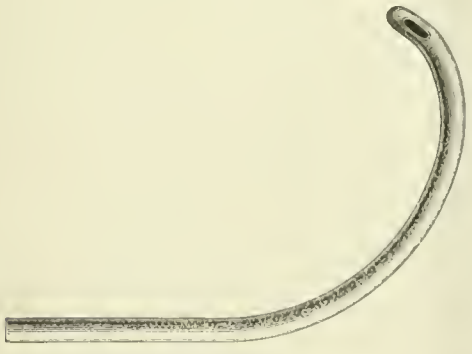
Guyon modification of Mercier catheters.

Fig. 3.

Double-curve catheter.

(2) When a catheter refuses to overcome the obstacle in this manner, it is prevented possibly, by the angle of its beak (see Fig. 2) being too small. One whose beak has the next larger angle is then used. This process is continued until a catheter selected overcomes the obstacle. In some cases

Fig. 4.



Metallic prostatic catheter.

double-curve catheters (Fig. 3) will be found necessary to attain the desired end.

In exceptional cases the metal prostatic catheters (Fig. 4) will be required. Their employment is demanded especially when severe spasm is associated with the retention, or when the condition is complicated by local disturbances.

In all cases, the bladder must be emptied *par etappes* (Guyon); *i.e.*, by the same gradual method advised for the relief of retention due to stricture. When the urine is aseptic, boric acid solution will suffice. When the urine is infected, solution of silver nitrate, 1 to 5,000 down to 1 to 2,000 or stronger, must be employed. When the urine is very turbid and putrid, resorcin 1 to 500 down to 1 to 100 often proves serviceable.

Retention due to prostatism may be complicated by a foul bladder produced by (1) cystitis due to decomposing residual urine, (2) infection from without, (3) infection from the upper urinary organs, (4) stone, (5) bleedings from the prostate or the bladder-walls, (6) intravesical growths.

Whenever any complication is present, or when catheterism is difficult, it is advisable to anchor the catheter in place as soon as the emergency is overcome.

According to the condition, the mouth of the catheter is plugged as advised in the treatment of retention due to stricture, or the bladder is continuously drained. The drainage by catheter is easiest of accomplishment by attaching a short rubber tube to the mouth of the catheter and resting its free end in the bottom of the narrow tube of a Du Chastelet urinal in which a tablet of mercuric bichloride is kept.

In some cases catheterism and drainage may be impossible, because of (*a*) immense prostatic enlargement, (*b*) irritability of the urethra, (*c*) unwillingness of the patient to submit to the necessary procedures, even when painlessly conducted.

Suprapubic puncture (see Retention due to Stricture) may then be employed to overcome the emergency. Frequent repetition of these punctures, when the bladder is infected, cannot be advised.

In any of the above conditions, or when membranous cystitis, stone, a growth, severe bleeding or menacing infection of the upper urinary organs exists, radical operation is required.

According to the condition, the intervention needed may be suprapubic or perineal drainage, galvano-incision of the prostate (Bottini) or complete prostatectomy.

Less frequent, yet occurring often enough to warrant mention here, are the following causes of vesical retention of urine:

9. *A Tight Meatus.*—This, especially in the newborn or in others, when any irritative condition causes the occlusion, may produce retention of urine. Its mere presence can also, by evoking that spasm of the compressor, described by Otis Sr., some thirty years ago, suffice to prevent extrusion of urine. The condition itself indicates the treatment—prompt meatotomy.

10. *A Tight Prepuce* for the same reasons may provoke spasm of the compressor. Immediate relief is obtained by at least slitting the foreskin, when the emergency is so urgent that there is not time for circumcision.

11. *Phimosis and Paraphimosis.*—Either of these conditions may be the direct cause of retention of urine, as they also may evoke that compressor-spasm which can prevent evacuation of the bladder.

12. *Severe Hyperacute Urethritis*, gonorrheal, chemic or traumatic, may cause such swelling of the mucosa as to render the urethra impassible for urine. Wossidlo[1] concisely disposes of such a sudden, complete retention by advising the use, at first, of narcotics and hot baths: "If these fail, catheterism must be employed. For this purpose a soft, well-sterilized, elastic (Nelaton) catheter is used, after carefully irrigating all that part of the urethra that may be accessible thereto, with a hot solution of potassium permanganate 1 to 4,000 and then anesthetizing the mucosa with cocaine or beta-eucaine."

13. *Foreign Bodies.*—These may occlude the urethra or so rest within the bladder as to obstruct the internal meatus. Such bodies may be produced within (*e.g.*, stone, blood-clots, thick, dense shreds of mucus) or may have been inserted for therapeutic purposes (*e.g.*, broken catheters) or with masturbatory intent. To what extent the last-mentioned psychic aberration may go, is well exemplified by some Crétins of the Alps. Among these people are found furious, persistent masturbators, who, when their ordinary means of self-gratification cease to be effective, insert twigs even beyond the compressor into the posterior urethra for the purpose of titillating the colliculus seminalis in order to produce an orgasm.

Occasionally a young female is seen who, in endeavoring to rid herself of the product of conception, tries to insert a catheter or crochet needle or other foreign body into the womb. Through ignorance and maladroitness she forces it into the bladder, where it may fall behind and occlude the internal meatus, besides provoking cystitis.

Even if a foreign body does not prevent urination, or does not produce very troublesome symptoms, its removal is imperatively indicated. When lodged in any part of the urethra, but not very firmly imbedded within its tissues, the foreign body is generally most easily removed with the aid of the urethroscope. When, however, the urethral caliber is too small for the introduction of a serviceable tube, efforts may be made to remove it with a urethral foreign-body forceps, guided by the sense of touch.

When the foreign body is wedged deeply in the posterior urethra and cannot be removed and is small enough to permit being so treated, the retention may be relieved by thrusting the foreign body backward into the bladder by means of a sound aided by a finger in the rectum. Of course, its removal from the bladder must be accomplished as soon thereafter as possible. Occasionally such a stone imbedded in the tissues of the perineal urethra cannot be dislodged by any of the means mentioned. Then it must be removed by perineal section. Guiteras[1] reports such a case, the stone thus removed by him probably being the largest on record as taken from this region.

A foreign body in the bladder requires removal, if small and soft by the Guyon brisepierre or the Nitze operating cystoscope. If large, litholapaxy, and if too hard for crushing, cystotomy will be required. If for any reason, an emergent retention due to a foreign body cannot be relieved by catheterism, the major operation indicated must be at once performed. It is unnecessary to add that the preceding is not offered as more than a very rough outline of the vast subject of foreign bodies in the urethra and bladder.

14. *Tumors* within the bladder or near it may preclude voiding urine. Ordinarily the emergency may be met by catheterism, or, when most exceptionally this cannot be accomplished, by suprapubic puncture. Naturally, the cause of the retention must be relieved by operative intervention as soon as the patient's condition permits.

A consideration of the sequelæ of retention of urine would carry us beyond the confines of this paper.

A cardinal rule, which in closing may be referred to, is that a patient with retention of urine must not be left until the retention is relieved.

It is but natural to inquire why an effort, at best but crudely sketching an isolated symptom, is presented before eminent genito-urinary specialists and in a program of deeply scientific, original papers. One justification therefor is advanced by our great master, Professor Guyon.[2] In connection with retention of urine, he says: "But when a morbid phenomenon acquires such an intensity that it not only disturbs a function, but renders it impossible, then, for this very reason it becomes a disease."

Again, it is hoped that this paper will be honored by a discussion. Such discussion will lend a value to the effort, which it could not otherwise attain.

Summary.—(1) When danger to life is not imminent, the domestic methods ordinarily employed may relieve the vesical retention, provided no mechanical obstacle exists. (2) Diuretics, diluents and antispasmodics are of no use in vesical retention of urine. (3) Opiates and general anesthesia are useful only under certain circumstances. (4) Capital surgical intervention may be necessary to cure the basic condition, but the urgent symptoms can, in most instances, be relieved without life-endangering procedures. (5) Even the youngest general practitioner can carry every case of vesical retention of urine to a successful issue. (6) The cause of the retention must in each case be ascertained. (7) Only most exceptionally does a case present which cannot be relieved by minor procedures. (8) No bladder should be suddenly entirely emptied because of the danger of hemorrhage *ex vacuo*.

[1] Hans Wossidlo: Die Gonorrhœa des Mannes. Enslin, Berlin, 1903.

[1] Ramon Guiteras: Case of Rectoperineal Stone. Philadelphia Medical Journal, November 25, 1899.

[2] Guyon: "Maladies des Voies Urinaires." Ballière, Paris, 1903.

THE DANGER OF THE USE OF OPIUM IN INFANCY.

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IN a recent text-book the author asserts that any form of opium discreetly given in small doses is safe and harmless in infancy, and that its action and effects are always transient. This seems so opposed to many facts and experiences that it is evident that the author was stating unsupported theories of the past. For years the bad effects and positive injuries to infants and children from the use of proprietary drugs and soothing syrups containing opium have been pointed out, until the danger seems beyond question. The various tinctures and infusions containing opium in some form depend for their popularity on the fact that they quiet irritation and pain, particularly from neurotic and nutrient disturbances.

In adult life opium and its alkaloids are usually depressants with a short period of excitation. This seems frequently to depend on the size of the dose, although it varies widely in many instances. From some peculiar condition of the organism opium may act as a sharp stimulant, that is, increase the heart's action producing wakefulness and exhilaration for a time, then merging into sleep and narcotism. In other instances this stimulant effect is very short, and the narcotic period comes on after the drug is taken, and is preceded by pleasing quietness, comfort, and then sleep. These two effects are very marked in some cases. Where children are given official doses producing increased excitement, with nervous twitching, then sleep and stupor it is evident that its action is very dangerous. In other instances under the same condition and doses, where profound sleep and stupor follow, there is great susceptibility to the narcotic action.

The physiological action of opium and its alkaloid are more pronounced in infancy and childhood than in later life. One reason for this is that the organism is more unstable at this period, and also because there is less resistance, and the drug makes a more profound impression on the sensory centers than later in life. Its sedative action is that of palsy, where the cell functions and the cells themselves are disturbed and diminished, and it is impossible to tell whether this checking may not become permanent, producing change and perversion that continues all through after life. The action of opium while apparently falling most heavily on the sensory centers extends to other neurons and functional states, and probably concentrates on that part of the brain most susceptible to its peculiar pathological action.

It is evident that coarse low organic natures, and imperfectly developed brains and bodies are less susceptible to the sedative effects of opium than those persons of high developed nervous organization. The higher the organism, the more pronounced the effect from smaller doses. The coarser the organism, other things being equal, the larger the dose required to secure its physiological action. These general facts are the same in infancy. A child who is very susceptible, and is relieved at once by very small doses illustrates one phase, and another child of the same age, who requires double the dose to secure narcotic action belongs to the other class. In both the resisting power is very feeble, and it is impossible to tell what organic changes may follow from the chemical and physiological action of any form of opium. And it is also difficult to decide whether the effects are transient in infancy and childhood, or whether each dose does not help to create a demand for its further use in the future.

In adult life the pleasing psychic effect from the action of a single dose calls for its repetition under like conditions. In infancy this same effect may be noticed in a child who has once been quieted by opium, in the unconscious manifestation of excitement which is only allayed by a repetition of the drug. This is clearly a pathological demand, and an ominous symptom of the danger from the use of opium where its effects are rapid and pleasing. Nursing children suffering from irritation, indigestion, and troubles incident to infancy have been quieted by opium taken by the mother, acting through the milk.

Opium-taking women have in this way permanently injured their children, retarding their growths, and leaving a defective organization which created a tendency to use some form of opium in after life. An instance of this kind occurred in the family of a noted missionary where three children were nursed by a Hindoo woman. Each one of them grew up with abnormal, highly sensitive brains and feeble power of resistance, and all became spirit and drug takers before middle life. It was ascertained that the nursing woman was an opium taker, and the poison of this drug was in some way transmitted to the children, permanently changing the nervous organizations and vigor. Another instance quite as startling, was that of a mother who gave large quantities of soothing syrup to two of her children in infancy, then becoming convinced of its danger, abandoned its use. These children in middle life, became neurotics, spirit and drug takers. Three children born later and not given any drugs in early life, grew up strong and healthy. The effects of the soothing syrup in infancy was undoubtedly the cause of the neurosis seen in the older children.

There can be no doubt that continuous sedation, or palsy of the sensory centers in early life is never repaired. The growth and development of other organs may do much to overcome this perversion and injury, but the defects remain, and appear in adult life in the feeble pain centers, and low power of resistance. In a family of five children whose parents were very healthy and strong, each one developed a neurosis and nervous disturbances that was unusual and without any visible cause. All seemed to have feeble

nervous systems, and to suffer from nutritional and nervous disorders, and were both irritable and dull at times, and all because spirit and drug takers. The mother had used laudanum in infancy for some functional disorders, and without the advice of a physician.

The presence of nervous dyspepsia beginning soon after puberty, and continuing for a few years, until some form of alcohol or opium is used is a hint of the use of opium in early life. Early and profound exhaustion from overwork or excitement, low vitality and feeble nervous resistance is a natural sequel to the use of opium in infancy. Defects and degeneracies which break out in early manhood suggest the same cause, and often follow from the use of soothing drugs given in infancy. A tendency to seek relief from every discomfort and pain, which may properly be called a neurotic diathesis, can be positively grown and cultivated by the use of opium in early life, although it it may not appear for years after.

The magnitude of this danger is not at present recognized. The routine and thoughtless prescription by the physician is often followed by grave disorders in later life. Opium by covering up the pain signals is not curative, but may be destructive in more ways than at present known, and this injury will only be recognized in the future. Too much caution cannot be given against the use of narcotics in infancy. Of these, opium is probably among the most dangerous, because it is so easily accessible, and its effects are apparently so simple.

WATER ANESTHESIA IN SURGERY, AND ITS SUGGESTIONS IN MEDICINE.

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This brief article cannot be better introduced than by a detailed description of an operation in which the above principle is illustrated. On February 4, 1904, I took a patient to Dr. Gant, of New York, to be operated on for "piles," a handful of them, always heretofore a hospital case of several weeks' duration. The doctor, however, did the work in the office by his new method, water anesthesia (see his article in the *New York Medical Journal*, January 2, 1904). No anesthetic was used, either general or local. The procedure was as follows:

Each "pile" was injected with distilled water, and at once emptied, clamped, tied and cut away, five being so removed in this instance. The operation occupied about fifteen minutes, and the patient, my nephew, returned home with me, walking to the trolley cars, ferryboat and train.

Another patient was treated, a tuberculous case. Under water anesthesia fistulæ were opened and scraped; another, deeper one, was found and the cutting and scraping were done without injection of water in this instance, but with such intense pain as to leave no doubt as to the reality of the anesthetic effect of the water, and the absence of any influence of suggestion, auto or otherwise. Several weeks earlier a "major" operation was performed, a laparotomy, in which eight inches of the colon were removed, with no other aid during the operation than the hypodermic injection of distilled water.

Now as to the anesthesia, caused, one may say *produced*, effectively and effectually, by the water, or rather the principle and explanation of it. Dr. Gant says that as soon as distention of the parts is secured, accompanied by blanching, anesthesia is attained and he proceeds to cut without fear of giving any pain, just as he would under ether or cocaine. The distention and blanching are of course merely mechanical; the question is, What is back of and beyond these? that is the secret, the effective agency in the phenomenon, the anesthesia? As I told Dr. Gant, after watching the operations, the water enters the interspaces of the tissues and fills them; the pressure of the distention causes rapid osmosis into the intracellular interspaces—for there are such between the granular appearing substance, the protoplasm—temporarily suspending intracellular respiration, which, like the beating of the heart is incessant, and thereby causing local "death," for the time being. The nerve centers being paralyzed no afferent impulse is sent, and no response in the central ganglion arises, and of course pain is impossible.

This is still too early for a mature expression of opinion on the case, but important enough as a basis of "research" into the nature of the phenomena. Now for the point to be made and illustrated by these facts, and the principle they embody. Nothing save distilled water was used in these cases, and scores of others I have since seen. Would it be correct to say that distilled water has medicinal or anesthetic "properties," a "sedative action," or the "power to prevent or remove pain"? This is said of cocaine, eucaine, morphine, etc. There is just as much of "curative" or other "property" in distilled water as in solutions of cocaine or any drug. In other words, there is none whatever. The "property," the therapeutic or whatever action arises, is protoplasmic. In the specific instance of anesthesia, in the cases referred to, the distention, the pressure was mechanical, and effective in the suppression of cell respiration. Here we have, what may be termed negative results in suppressed protoplasmic activities, forestalling the cellular and protoplasmic action which occasions pain. Upon the fact and principle of protoplasmic activity are to be interpreted all organic phenomena. On this alone all manipulation of the complex and multiplex processes involved in disease may be based and guided. In the exhibition of drugs in the so-called "cure" of disease, the first question is: What action will result? This is a point in chemistry; biochemistry if one choose, though not necessarily so, as yet.

The second question is: What response will accrue from the mechanical and the chemical action of the drug injected? "Ah! there's the rub." Of this, alas! we know so little! Medical literature is marred by misapplied use of terminology, and misnomer. Newspaper and trolley-car advertisements catch up, exaggerate and spread the error. "It works while you sleep." "It acts while you take it," and the deluded public pay the dollar for the package which is a "sure cure" for the disease from which the carefully worded description makes the reader feel as sure he is suffering. "What are we going to do about it?"

A NEW INSTRUMENT.[1]

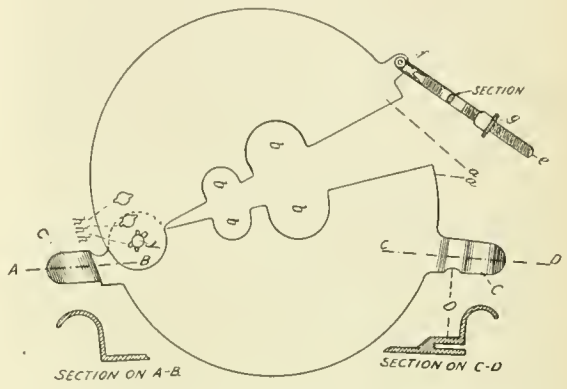
BY W. A. SEDWICK, M.D.,
OF PUEBLO, COL.

THE following is a description of an instrument for the protection of soft tissues when amputating and for hastening said operation, and which, for want of a better name, I have called an "amputation shield."

Description.—Two concavo-convex blades make the shield. There are two oval openings about the center, which openings are for the reception of one or two of the long bones. They may be enlarged or contracted at will, and either one may be enlarged or contracted proportionately greater than the other if desired, thereby giving practically any size, at the same time, of either of the openings or of both. One blade of shield has a male, and the other three female portions of a lock. This lock serves the double purpose of holding this end of the blades together, and aiding the regulation of the size of the openings. Corresponding with this, on the opposite side, is another lock, which has a tongue 8 to 9 cm. long, the upper and under surfaces of which have screw-threads, while the sides are smooth and flat. This is attached to one blade by a screw, and plays into a groove made for it on the other blade. A nut on the free end of the tongue, retains it in place as well as assists in regulating the size of the openings which receive the bones. The screw and nut are movable for cleaning. Attached to one blade are two supports or handles. On the proximal surface are the attachments for locks, etc., leaving the distal wholly smooth over its entire surface, with nothing to interfere in the application of a saw. Fig. 1 shows the instrument put together. Fig. 2 shows it applied.

Use.—It has been my privilege to use the instrument described several times, and to my entire satisfaction, and if it proves of the same benefit in the hands of other surgeons, it will, I hope, find a wide field of usefulness. We have all used the three-tailed bandage, gauze or towel, but I fear with very poor or only fair success. Retractors are not, I think, in general use. An assistant is not necessary to hold the shield, but to insure firmness, retraction, if necessary, and dexterity, he will not be superfluous. One of the openings—the smaller—may be entirely obliterated if desired, as for example, when there is but one bone involved, such as a humerus. It is not presumed that it will adapt itself to every inequality of the bones, but it will to the extent of preventing the protrusion of any of the soft tissues or flaps. The convexity is greatest at the point of application of saw, *i.e.*, at the point of the openings, thereby insuring free motion to the saw.

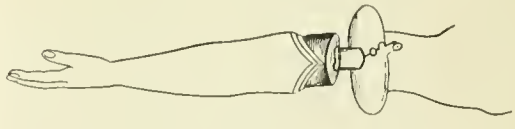
Fig. 1.



Concave surface: *aa*, blades of shield; *bb*, openings for bones; *cc*, supports or handles; *d*, groove in which tongue (*c*) plays; *f*, screw attaching tongue to blade; *g*, nut on free end of tongue; *hhh*, female, and *i*, male parts of lock.

Application.—After the flaps have been made and the periosteum well denuded and pushed back, open the instrument, apply around the bone or bones, retract to the point elected for amputation, throw the tongue into the groove and screw nut as tightly as practicable. There is then an absolutely clear, clean field. (See Fig. 2.)

Fig. 2.



Showing application and field ready for division of bone.

The following are some of its advantages:

1. It is easily made aseptic.
2. Easy of application, and quickly adjusted.
3. It protects absolutely the soft tissues or flaps.
4. It gives a clean, clear, non-obstructed view of the field of operation, and thereby saves what is often most valuable time.

[1] Read before San Juan (La Plata County) Medical Society, Jan. 8, 1904.

5. It is applicable to one or two bones, and to practically all parts of them.

6. It leaves a minimum of bone denuded of periosteum, which might possibly undergo necrosis.

MEDICAL PROGRESS.

MEDICINE.

Antistreptococcic Serum in Smallpox.—A series of cases of smallpox has recently been treated by injections of antistreptococcic serum with such good results that A. C. Smith (Med. Rec., April 2, 1904) believes that this method promises more success than any other. A full dose of twenty c.c. was used in each case and repeated in some of the severe ones. The advantages of this method were a shortening of the duration of the disease, absence of the secondary fever, lack of absorption of the septic products by prevention of pus formation, no pitting, no marked debility, less suffering and much less liability to lung and kidney involvement with a much more rapid convalescence.

Chronic Brass Poisoning.—One of the most confusing chapters in the domain of metallic intoxications is that relating to brass poisoning, and the varying opinions expressed in the literature would lead to the idea that there are no distinctive symptoms. H. N. Moyer and J. M. Lavin (Medicine, May, 1904) report a case which they believe is true brass workers' ague. The general symptoms are those of a chronic metallic poisoning, but differing from most metals in the development of chills, which are strikingly like but lack the ordinary periodicity of malarial ague. The green line on the gum serves to distinguish this from other metallic poisons, but it is not constantly present particularly in those who take good care of their teeth. The organic affections of the nervous system so common in other forms of metallic intoxication, are absent. The attacks are probably due to excessive ingestion of the metal, and most likely to the copper element in the alloy.

Organotherapy in Diseases of the Pancreas.—The successful administration of thyroid extract in diseases of that gland favors the supposition that a similarly good effect may be attained in disturbances of the pancreatic functions. K. Glaessner and J. Sigel (Berl. klin. Woch., April 25, 1904) have carefully studied the administration of various organic products in a series of cases where disease of the pancreas was believed to be present. Symptoms which were considered as characteristic included pancreatic colic and disturbances of metabolism and digestion, marked by the appearance of sugar in the urine, fatty stools and insufficient absorption of albuminoid materials. Among the various products which were tried they found that thyroidin exerted an unfavorable influence on the symptoms. Pancreon had little effect on the absorption of nitrogen and none at all on the fat. When pancreatin was used, however, the resorption of nitrogen was increased from 52 to 56 per cent., and the fat from 41 to 68 per cent. The most favorable results followed the administration at the same time of large doses of the alkaline carbonates, but the alkalin alone were not attended by any improvement. The best combination was a mixture of pancreatin and sodium bicarbonate.

Observations on Trichinosis.—Valuable additions to the knowledge of trichinosis is contained in an article by K. Schleip (Deutsch. Arch. f. klin. Med., Vol. 80, Nos. 1 and 2), who had occasion to study an extensive epidemic. The incubation was in general short, since many patients became ill the day after the infection, the remainder began to complain on the third to the eleventh day. Ofttimes the disease gave the general impression of typhoid and formerly great stress was laid upon the absence of enlargement of the spleen in trichinosis, but since the author could distinctly palpate the organ in almost every instance, other signs must be looked for. These are found in the blood, and a blood examination will always be of inestimable value in sporadic cases when trichinosis is not thought of. The amount of hemoglobin and the quantity and quality of the erythrocytes does not vary much from normal, the blood-platelets are considerably increased after the acute symptoms abate and there is generally a leucocytosis which rarely reaches 20,000. The greatest interest centers around the eosinophile cells, which are most abundant in the severest cases but almost always above normal. The highest figures obtained were 62.2 per cent., while in pemphigus only 33 per cent. has been reported, and in urticaria 60 per cent. It was impossible to ascertain how early the eosinophiles make their appearance, but since 44 per cent. was already found on the tenth day of the disease, the symptom is probably a very early one. The neutrophiles were generally diminished, the lymphocytes somewhat increased, especially during convalescence. Variations in the quality and staining properties of the cells were never noticed. The two diseases which are most likely to be confused with trichinosis are typhoid and polymyositis; in the former a blood-count will readily decide the diagnosis; while for the latter, records of blood examinations could not be found. In the affected muscles there are inflammatory changes, both of a parenchymatous and interstitial type, spread over all the fibers independent of the seat of the trichinæ, but in their immediate neighborhood there is, in addition, a well-marked granular degeneration. The capsule is surrounded by a wall of small round cells consisting of lymphocytes, connective tissue cells and a few polynuclear leucocytes; external to this infiltration, the degenerated muscle-fibers are very rich in eosinophiles, probably as a result of the chemotactic action of the toxins secreted by the parasite. Transitional stages between neutrophiles and eosinophiles were found in neither the tissues nor the blood, but occasionally the basophiles contained some distinct red granules.

Splenomedullary Leucemia.—The case of splenomedullary leucemia, which was recently reported by Dr. Nicholas Senn as being cured by the use of the Roentgen rays, has led to the report of two other cases which may be claimed as cures. B. L. Bryant and H. H. Crane (Med. Rec., April 9, 1904) employed both arsenic and the X-rays in the first case, and the latter means seemed to materially hasten the recovery. In the second case arsenic alone was used, and although the improvement was slow, it was nevertheless constant and permanent. In Dr. Senn's case arsenic was also used, so that it still seems doubtful how much of the benefit was really due to the X-rays.

Lysol Poisoning.—Though lysol is considered a harmless drug, some 38 cases of intoxication are reported, of which 17 were fatal. In some cases a single teaspoonful gave rise to alarming symptoms while in other cases recovery followed after 100 grains had been taken. A new case is reported by F. Fries (Münch. med. Woch., April 19, 1904), where the organ most affected was the kidney. The urine contained large numbers of casts covered with red blood cells, pigment and epithelial cells and as high as 12 promalbumin. Some of the casts were so large that they could be seen with the naked eye; their size and their branching make it probable that they originated in the collecting tubules near the pelvis. Their occlusion lead to uremic symptoms, which disappeared after a saline infusion.

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DIGITALIS IN HEART DISEASE.

Notwithstanding the elaborate and painstaking studies of the physiological effects of digitalis that have been made, there is still no little doubt as to the exact indications which the drug can be expected to fulfil. The discussion of this subject last week at the meeting of the American Medical Association, in the Section on Medicine (see our Society Proceedings in this issue, page 1085) shows that there is at least a fairly definite agreement among prominent clinicians as to certain contraindications and some conclusive observations as to what type of heart disease it will benefit. It is unfortunate that to many physicians the word heart disease at once brings up the suggestion of the administration of digitalis. As a consequence of this false therapeutic nexus the assertion made during the discussion at Atlantic City that digitalis has probably done more harm than good, because of this lamentable tendency to use it in all cases of heart disease, once compensation is broken, would seem to have a certain amount of justification.

There is no doubt that digitalis employed in mitral regurgitation with symptoms of loss of compensation is often an extremely helpful and always a very satisfactory drug. On the other hand, any one who has seen the uncomfortable effects produced by digitalis in cases of aortic regurgitation, in young persons with hypertrophy of the left ventricle, especially where patients are still able and are allowed to be around on their feet, will realize how much harm may be done by its use in heart disease without proper selection of cases. It may be said at once that to suggest its use simply because there is a murmur present and because perhaps the patient is nervous as the result of having recently been informed by an insurance examiner or after some chance examination of the heart for some other reason, that he has heart disease, is almost sure to be harmful.

The typical cases in which digitalis does good, according to the consensus of those who took part in the discussion at Atlantic City, are those suffering from chronic mitral endocarditis due to rheumatism. In these cases, if both the aortic and the mitral valves have become affected, as sometimes happens, then digitalis does good notwithstanding the fact that in simple aortic regurgitation it is usually contraindicated. These cases, however, are seen typically in young persons, before there is any degeneration of arteries. Whenever there are sclerotic changes present in the arteries, as is typically the case in most instances when aortic disease develops, then digitalis is always contraindicated.

In stenotic conditions at the various valves digitalis would seem to be nearly always a dangerous drug. With regard to mild amounts of stenosis at the mitral valve there may be some doubt in the application of this as a general rule. In aortic stenosis, however, there can be no doubt, as the increased action of the left ventricle produced by digitalis when exerted in the direction of the already blocked path, through which all the blood in the body must pass about twice a minute, is sure to produce overdistention of the cavity with degenerative changes in the muscular fibers and dilatation rather than compensatory hypertrophy of the heart. When there is a considerable amount of stenosis of the mitral valves the same thing would seem to be true, since the auricular fibers are much less capable of hypertrophy for the purpose of overcoming the resistance that the blood stream encounters at this orifice. Some stenosis here, however, probably exists with every regurgitation and the indications are not so absolute.

In general it may be said, however, that the most important factor in any successful thera-

peutics of heart disease, whether it be by the use of digitalis or any other remedy, must always be considered to be absolute rest for the patient. It would seem especially unfortunate to use digitalis freely at times when patients are around on their feet and using practically all the strength they have when they should be resting quietly in bed and giving their hearts the indispensable opportunity to recuperate after the strain and the overwork which have caused the break in their compensation. It is the neglect of this precaution that, especially in the early and often quite tractable forms of mitral heart disease, is the true cause for complaints on the part of physicians of the failure of digitalis to give relief. There is another cause in the neglect of proper regulation of diet and due attention to intestinal evacuation which must be the first step in any treatment of heart conditions.

One of the greatest clinical teachers, here in America, once impressed this lesson upon his class by demonstrating a patient in whom both mitral and aortic regurgitation were present with, in addition, some leakage of the tricuspid valves. Heart compensation, which had at one time in the patient's history been quite satisfactory, was completely broken down. The Professor said, "You see how serious is this case. Of course we shall put him to bed and require him to rest there absolutely—that is, not allowing him even to sit up to eat or read. We shall make his diet as bland and as unirritating as possible and it shall consist mainly of milk, which fortunately he likes very well. We shall keep his bowels freely open and shall remove all sources of worry, as far as possible, from him. Of course we must give him medicine, otherwise he would be sure that nothing was being done for him. We shall prescribe for him ten drops of compound tincture of cardamom every two hours for the next week and I shall show him to you at the end of the week and you will see how much he has improved." The event justified his prophecy. The lesson was too precious ever to be forgotten.

NEW YORK'S OYSTERS AND TYPHOID FEVER.

It is now some years since it was absolutely demonstrated by careful investigations made in England and in this country that oysters may be an important means of transmitting typhoid fever. Notwithstanding this, there has been a general impression that while the occurrence of typhoid fever as the result of infectious material consumed with raw oysters did happen at rare intervals, it was very exceptional, and most people have gone right on eating oysters and other shellfish with only occasional times of carefulness—after some specially sensational announcements. If there are any left, however, who doubt of the possibility of the transmission of typhoid fever by means of oysters, such doubts would have been removed at a recent meeting of the Medical Society of the County of New York, held April 26, 1904.

The larger question emerges from this discussion, Why is it that typhoid is not more frequent when one considers the question from the infectious standpoint?

Dr. Bensel, the acting sanitary Superintendent of the Department of Health of New York City, gave a practical demonstration by lantern slides of the proximity of the beds where oysters are stored for fattening purposes to many sources of sewage material, human and animal, as from house drainage, the overflow from street drains and the like. The various oyster beds near New York were investigated, and practically the same conditions were found to exist in them all. On the Long Island shore of the Sound, on the Connecticut shore, in Staten Island, and on the Jersey coast, everywhere outhouses and barns are near the streams in which oysters are kept under water for days before being shipped to market.

After securing a load of oysters it is the usual rule of the dredger to bring them up some of the small streams where for several days they are put in the brackish water containing much less salt than that in which they lived during their growth. As the result of osmotic phenomena, the oyster, under these circumstances, absorbs and retains much more water than in its natural habitat. Thus the oyster acquires the fat succulent appearance which certain of the uninformed prefer, but which no true connoisseur in shellfish will ever accept as natural.

The fattening is carried on either on the lower floor of an oyster house, which is below the level of the water, at high tide, at least, or on the bottom of an oyster float; in tidal waters usually the houses are employed. In many cases, Dr. Bensel showed that within a few yards, indeed, often within only a few feet of these oyster houses, privies and cesspools were built and that sometimes the leakage from them surely would permeate the short distance to the bank of the stream, or even flow directly into the oyster house itself. Where the oyster floats are more common, as in Jersey, it is not unusual to find

that cesspools are erected in such a way as to allow the dejecta to find their way directly into the stream. In one instance, indeed, an oyster float was situated within a few yards of an outhouse used by a large number of people in a factory on the banks. Sewage of various kinds from the little towns finds its way into the small streams and, owing to the sluggish nature of the flow, because of tide-water below, this material readily finds its way into the oysterflats.

Another investigation of the New York Board of Health, under the direction of Dr. Cyrus Field, shows that ordinarily in salt water, typhoid bacilli will gradually die out, though for at least six days a number of virulent microorganisms remain. When oysters are stored in salt water then, there is not so much danger. In fresh water, however, the destruction of typhoid bacilli is not so rapid. Dr. Field also showed that in healthy oysters, the vital processes seem to protect the shellfish from becoming a mere culture medium for typhoid bacilli and that consequently there was at least no increase of the number of bacilli but on the contrary a gradual reduction in number. In oysters that are dead, however, or of lowered vitality, because of maltreatment during shipment, typhoid bacilli grow very rapidly. It would be natural to expect that oysters undergoing this fattening process in unclean water would therefore present a rather favorable condition for the growth of typhoid bacilli. They certainly are not so resistant as are healthy oysters.

It is very evident that a change will have to come, if the inhabitants of New York are to be protected properly from the dangers of typhoid fever. At one time, it seemed hopeless to think of protecting the city's milk supply. We have learned in recent years how much may be accomplished in this matter by care and insistence. The same amelioration of conditions must now be secured for the oyster traffic. The unhygienic process of fattening, unjustifiable from many points of view, must no longer be allowed or else must be conducted in perfectly clean water. This would not be difficult if, for instance, oysters were kept on the floor of a house through which was allowed to flow a stream of drinking water from the hydrant of a town known to have a good water supply. If necessary, salt may have to be added to such water in sufficient quantities to keep the oysters in a healthy condition. Certainly, with present surroundings, it is a wonder that there is not more typhoid fever, though many physicians have recently said that considering how fairly good our water is and the present supervision of our milk supply it is surprising to see how many cases of typhoid fever still occur. These announcements come at the end of the oyster season and it is to be hoped that measures for the proper protection of the oyster industry will be taken during these months without "R's," when the bivalve is not popular.

ECHOES AND NEWS.

NEW YORK.

Psychopathic Branch of New York Hospital.—Dr. S. B. Lyon, of Bloomingdale, has just revised and amended Dr. Pliny Earle's description of the old Bloomingdale Asylum in an attractive pamphlet.

Cornell University Medical College Commencement.—The Sixth Annual Commencement of the Cornell University Medical College was held in Carnegie Hall on Wednesday, June 8. Fifty-five students received their degree. Dr. W. W. Keen delivered the address of the evening. The ten students standing at the head of the class, counting the marks of all four years, were in order as follows: G. W. Cottis, Helen L. Carter, S. Feldman, C. A. Squires, E. N. Peck, W. Grossman, J. M. Goldberg, H. C. Becker, L. A. Parmenter and H. C. Gifford. G. W. Cottis, who stands at the head of the class, received a rating of 92 per cent. In addition to the money prizes to the first three of the ten a set of otological instruments was presented by Prof. Bacon for the best work in Otology during the year to Charles A. Squires, and a money prize by Dr. Dana for the best work in Neurology to C. L. Nichols. Dr. Austin Flint presented three prizes, each consisting of handsomely bound set of his own essays, to L. F. Schiff, of the second year class, and to G. W. Wheeler and L. L. Joshi, of the first year class, for the best work during the year in Physiology.

New Laboratory Building of New York University.—The council of the New York University, on the recommendation of the faculty of medicine, has arranged for the immediate erection of a six story edifice adjoining, and harmonizing in its architecture with the main college building. This will be completed and ready for occupancy with the opening of the college session of 1904-'05. It will furnish needed accommodations for the largely increasing number of students, and will render possible a further extension and elaboration of the laboratory work. The class room laboratories thus provided will be large and commodious, admirably lighted from two sides, and will afford exceptional facilities for teaching purposes. The first floor of the new building and part of the second will serve to increase the number of teaching rooms in the college clinic, which are greatly needed for the proper utilization of the 150,000 patients annually treated for clinical teaching. The remainder of the second floor will be used for the examination of specimens sent from the college clinic and from the medical and surgical services of the college in Bellevue Hospital. Students of the third and fourth year classes will have regularly assigned work in this laboratory, and will be thoroughly trained in the methods of clinical diagnosis. The third, fourth and fifth floors will be occupied by large class-room laboratories, devoted respectively to normal and pathological histology, bacteriology and applied pathology and chemistry. The

sixth floor will accommodate the increasing work in anatomy, experimental surgery and operative surgery on the cadaver. The removal of the class-room laboratories above-mentioned from the main college building will allow of immediate additions to the physiological and pharmacological laboratories and the pathological museum, and furnish greater facilities for research workers.

Epidemic of Meningitis.—The report of the Department of Health for the week ending May 28 shows that 80 deaths from cerebrospinal meningitis occurred here in the seven days, precisely 68 more than were reported in the corresponding week of 1903. Thirty deaths were of children under five years of age, 26 of children from five to fifteen years, 17 of persons between fifteen and twenty-five, and seven of persons between twenty-five and forty-five years. Last week the epidemic showed signs of abating.

Tuberculosis and the Health Board.—Pulmonary troubles have reached a maximum, says Dr. Darlington. One thousand cases are now under the direct care of the Health Department, the largest number on record. For the benefit of these sufferers and of the general community, Dr. Darlington has issued the following instructions:

"Be hopeful and cheerful. The disease may be cured, but it will take some time. Obey your physician's instructions faithfully; improvement may be lost by carelessness. Do not talk to any one about your disease, except your physician and nurse. Do not kiss any one upon the mouth. Shave your beard or wear it closely clipped. Stay in the open air as much as you can. Do not be afraid of cold weather; dust and smoke are worse for you than rain or snow. Keep at least one window open in your bedroom. Keep feet dry and warm. Avoid all unnecessary exertion. Never run or lift heavy weights. Never take any kind of walking, breathing or other exercise when you are tired, nor take them to the extent of getting tired. Go to bed early and sleep at least eight hours. Take a warm bath once a week. Take half an hour's rest on bed or reclining chair before and after the principal meal. Avoid eating when bodily or mentally tired or in a state of nervous excitement. Do not smoke or drink liquor, wine or beer, except by special permission, but drink plenty of good water between meals." The Department of Health is cooperating with Commissioner Woodbury in his war on foods that have been exposed to dust and germs. Dr. Woodbury's crusade against the exposure of food along the sidewalks or on outdoor stands will, if successful, drive the push carts out of existence and compel grocers and provision dealers to give up the display outside their shops.

New Medico-legal College.—St. John's College at Fordham will have medical and law departments added to its course of education, beginning with the fall term. They will be housed in a new building now in course of construction, and costing $125,000. It will be known as St. John's Hall. The Very Rev. Dr. J. J. Collins, the new rector of the college, said yesterday: "Formal application will be made to the State Board of Regents on June 27 for permission to have included in our curriculum the departments of law and medicine. While we have not been known as a university, our charter, obtained in 1846, is that of a university. Our name will be changed from St. John's College, Fordham, to St. John's University. We have been contemplating this increase of studies for some time, and have deemed it ripe for execution now. Especially is this so in the case of our medical department, since we are to have a public hospital on our grounds, four acres of which were purchased last week by the board of managers of the Bellevue and Allied Hospitals." "Are you to have the use of the hospital clinic?" Father Collins was asked. "We hope to have this courtesy extended to us. It has not, however, been mentioned by us to Dr. Brannan, nor was it stipulated in the sale of the property by us to them. Dr. Brannan assures us that the new hospital will be completed in about a year and a half, ground being broken for it in the next week or ten days."

PHILADELPHIA.

Official Guest of A. M. A.—Prof. A. Maitland Ramsay, M.D., of Glasgow, Scotland, the official guest of the American Medical Association was the guest of Dr. Charles A. Oliver of Philadelphia.

Physical Director for University.—Dr. R. Tait McKenzie, of McGill University, Montreal, has been appointed Director of Physical Education in the University of Pennsylvania. He will assume his duties at the beginning of the college year.

Red Light Treatment of Smallpox.—A pavilion has been constructed at the Municipal Hospital for the treatment of smallpox patients by red light. If the method proves advantageous, facilities for its use will be provided at the new hospital now in process of erection. For the first time in two years a week has passed without the report of a case of smallpox. Renewed efforts will be made to stamp out the disease during the summer.

Dedication of University of Pennsylvania Laboratories.—In the presence of an immense crowd of physicians from all parts of the United States, the new medical laboratories of the University of Pennsylvania were formally dedicated on Friday, June 10. Shortly before this hour a special train brought from Atlantic City some 800 of the visiting members of the American Medical Association as the guests of the University. Among them were such distinguished representatives of the profession abroad as Prof. Albert Hoffa, of Berlin; Dr. A. Maitland Ramsay, of Glasgow, and Dr. M. Miyushima, the representative of the Mikado of Japan, who is studying American methods of managing contagious diseases. Forming in line at Houston Hall the members of the faculty, headed by Provost Harrison, the alumni, and the guests marched to the steps of the new building. Here J. Vaughan Merrick, a trustee of the University, made the presentation address that formally gave the building to the University. He mentioned the great advances made by the University since it was removed to West Philadelphia thirty years ago. He said that the faith of the University in the highest ideals and its devotion to principles in seeking scientific truth and employing it in the service of humanity was embodied in the new building. Provost Harrison, in accepting the building, said he did so as a trust for the seeking of truth and the practical training of physicians. The University adds to her educational power the largest, best equipped, the most useful in interior plan and the most costly medical laboratory building yet erected, either in Europe or on the continent of America. He continued: "This great building bears no one person's name, and is the result of no single benefaction. It has been built up, rather, by numerous gifts, memorials and offerings, so that many hearts are turning toward this place to-day, and will rejoice with us all when I announce that no shadow of debt falls upon the new medical laboratories of the University of Pennsylvania." In the hall to be devoted to pathological histology the dedication speeches were delivered.

The Relation of Physiology to Medicine and Its Place in the Curriculum.—Dr. H. P. Bowditch, Professor of Physiology at Harvard University, who had been chosen to speak on the subject of physiology, said that the proper place of that branch would seem to be first as disease can be understood only when normal

functions are made plain. Anatomy demanded precedence, however, and the question is whether to place it first or give the two together. In Harvard the first three half years are devoted respectively to anatomy, physiology and pathology, an arrangement that has yielded favorable results. The greatest change in medical schools during the last ten or fifteen years has been the tendency toward laboratory instruction. This has been due to two reasons: (1) Medicine has followed the lead of chemistry and physics; (2) it has come as a reaction against too exclusive didactic teaching. The advantages are two, for power and for imparting information. What are the limits to this method of instruction? In the first place it is extremely costly. As an instance of this are certain experiments in metabolism if students are allowed to carry them through. Secondly, a considerable portion of the instruction must be given in didactic lectures. This brings up the question of how far didactic teaching trains the mental powers of the student. Dr. Bowditch believes that good lectures are a mental stimulus; they partially unfold a subject and invite thought on the questions involved. Recitations are even better than lectures as a means of instruction. Hence it can be seen that the laboratory has no monopoly on instruction. As to the relation of laboratory and lecture, the subject must largely determine this. In some, as nerve-muscle preparations, circulation of the blood, etc., the laboratory may be given first; in others, as metabolism and kindred subjects, lectures should precede the practical work. The reaction against didactic instruction is a good thing but in our enthusiasm we must not let the good things of former times be swept away.

Physiological Chemistry and Its Medical Value.—Dr. R. H. Chittenden, Professor of Physiological Chemistry at Yale University, said that laboratories are a true demonstration that medicine is an exact science. Under proper leaders they are a revelation to students and an inspiration for further investigation. The student here becomes confident; he proves things for himself and no longer has to take the mere words of a text-book. He is helped toward the freedom of mental supremacy. To those with exceptional minds they provide the means for the greatest discoveries. The laboratories being dedicated are a gain to the whole world as well as to the University. Medicine is two-faced; it is an empiric and it is a scientist. Real knowledge is a safeguard against quackery. Among the exact sciences physiological chemistry is one of the greatest and is destined to play an important part in medical education. There can be no clear or profound knowledge of pathology until the normal is comprehended and some phase of physiological chemistry is coming up at every turn. Dr. Chittenden then review in some detail the valuable results coming from the leadership and inspiration of Hoppe-Seyler in the laboratory of Strasburg. These illustrations he used to indicate the enormous latent power in a laboratory and to show the intimate relation between physiological chemistry and medicine; in the development of medical education the former will assume a more and more conspicuous position.

Pathological Anatomy.—Dr. George Dock, Professor of Medicine in the University of Michigan, a former teacher of pathology, spoke upon that phase of laboratory teaching. He traced the advance of that branch from its inception and referred to its brilliant future. He pleads for the further study of pathological anatomy by the student of clinical medicine. It is the bridge between the fundamental sciences and medicine. Practical teaching and laboratory methods are the topics of the day but they require material and time; the student's time in them is too short, but this should be arranged as well as possible. Sufficient teachers should also be furnished to properly handle the students and they should be trained teachers. The teacher should be also an investigator; his three qualifications are proper exertion, frequent exertion, and successful exertion. There are at present many demands for research workers alone but it is a pernicious idea that research work can be done only by hermits. Endowments to teaching laboratories are often of more value than to those for research alone. The idea that research work cannot be done by teachers is refuted by numerous brilliant examples. The same idea applies to hospitals; research hospitals are not necessary, though the means for research by the residents and staff ought to be furnished. The popular method is to furnish teachers with a number of "fellows." It is often better to give an overworked teacher a ten-dollar-a-week assistant than a "fellow" or two at a thousand a year. The neglect of pathological anatomy in the way of autopsies is a source of constant regret. An instance of this was in the war with Spain, where a half dozen autopsies would have soon settled the question of typhoid fever in doubtful epidemics. Large sums were spent for instruments to treat wounds that never came, while some of the largest hospitals did not possess a single autopsy instrument.

The Development of Laboratory Instruction in the University.—The storm of applause that greeted Dr. Horatio C. Wood, as he rose to speak, after being introduced by Dean Frazier as "the father of modern experimental therapeutics," must have warmed the heart of that veteran teacher who has given thirty-eight years of his life to the University. Dr. Wood briefly portrayed the development of laboratory instruction in the University from its inception. The term laboratory is often misused; in the older sense it means a place where experiments are performed. The first laboratory employed by Dr. Wood was the yard or stable of his uncle, Dr. Geo. B. Wood, and his instruments were made by himself or by a tinsmith. But here were performed experiments leading to conclusions that have never been disproved. Here was made the first investigation of a human disease upon animals ever undertaken and the results published in 1870, on thermic fever, are still classic. Little by little his laboratory facilities have grown since he was made Professor of Therapeutics in 1876, when he was given a janitor's room for that purpose, until the present magnificent quarters mark the climax. Of late years the word laboratory also means a workshop where students are taught. It is the only method for studying certain branches. The power of using delicate scientific instruments and noting the results is a great achievement. Dr. Wood made emphatic the point that though laboratories are essential, to the end the *man* is the important factor in teaching. One danger of modern laboratories is loading the man in charge with too much teaching. This can be averted only by properly increasing the teaching staff. In this way laboratories increase the expense of instruction. Endowments are now needed for medical as well as for other institutions; better a small laboratory with a large endowment than a large laboratory with a small endowment. Physicians are at fault in not securing money for our institutions; they fail to make known to the public the needs of—not ourselves but the people.

Inspection of the Laboratories.—Following the dedicatory addresses, the laboratories of physiology, pathology and pharmacology, which make up the new building, were thrown open for inspection by the visiting physicians. They have been described at length in a previous letter and detailed description is not now necessary. They are ready for occupancy, with the exception of installing instruments and other working paraphernalia. Pathological and physiological exhibits had been

arranged in many of the rooms for inspection. Only one opinion was heard from the inspecting guests: that for size, completeness and adaptability the new building excels anything heretofore attempted. After the inspection of the laboratory a collation was served at Houston Hall and at 10 P.M. the special train bore those who so desired back to Atlantic City.

CHICAGO.

The President of American Academy of Medicine.—Dr. Winfield Scott Hall, of Chicago, who has been elected President of the American Academy of Medicine, is the second Western man to receive that honor in twenty years. He has been professor of physiology in Northwestern University Medical School, this city, since 1895. He was born in Batavia, Ill., in 1861, and was educated at Northwestern and Leipzig Universities. He is a member of the Chicago Academy of Sciences and of other scientific and medical organizations, and is President of the American Medical Temperance Association.

Explanation of Chicago's Low Death Rate.—The low death rate of this city, which is fully two persons to the thousand less than that of New York, Philadelphia, Boston, St. Louis, or Baltimore, will be shown in all its bearings at the World's Fair at St. Louis. Health Commissioner Reynolds, of Chicago, will install the exhibit personally. It consists of a series of thirty charts, showing facts by comparative lines, four volumes giving blanks used by the department, photographs of the public baths and bathing beaches, and of the isolation hospital, and views showing the laboratory outfits for diagnosing diphtheria, pneumonia and other diseases. Assistant Commissioner F. W. Reilly, who prepared most of the exhibit, said: "Chicago reached its present low death rate by raising itself from the swamps, building a sewer system and introducing lake water from points as far as possible distant from pollution. It has cost the city $100,000,000 to do it. From a death rate of 73 to 1,000 in 1854, the rate has sunk to 15.43 in 1903, and it would have been barely 15 last year except for the Iroquois Theatre disaster." The chief gain has been in the rate affecting children under five years of age. This is closely associated with the department's inspection of milk and prosecution of offenders. The chart diagrams show that the following diseases are extinct or are diminishing in Chicago: Asiatic cholera, consumption, croup, diphtheria, measles, scarlet fever, typhoid fever, typhus fever, and whooping-cough.

Offer to State University of Harvey Medical College.—The University of Illinois may absorb the Harvey Medical College. A proposition has been made to the university that this school be turned over to it, as was the College of Pharmacy a few years ago, free of indebtedness. The President of Harvey College, Dr. Frances Dickinson, says the proposition was made to the Committee on Pharmacy, which was in session here about two months ago, and it is now under consideration by the medical committee of the University. Harvey College has been in existence for ten years, and during that time it has graduated twelve hundred students. Only 150 of these were full term students, as the school is maintained for persons over twenty-one years of age, who desire to take special courses in evening studies.

Some Practical Points on Adenoids and Adenoid Operation.—At a recent meeting of the North Shore Branch of the Chicago Medical Society, Dr. E. F. Snydacker read a paper with this title, in which he said that the diagnosis of adenoids should never be made on symptoms alone; before operation was performed, adenoids should be seen or felt. It was by no means necessary to operate every case of adenoids. Often symptoms attributed to adenoids were due to dyscrasia, of which adenoids themselves were only a manifestation. When the child was under improper hygienic conditions, adenoids become enlarged and symptoms aggravated; by improving the child's physical condition, the need of operation was often obviated. As the child developed, and nose and pharynx became more roomy, adenoids also becoming smaller, the child very often got along nicely without operation. There was often no great urgency for operation in such cases; it was always best to await the effects of hygienic measures and development. Different methods of operation were matters of personal choice; an anesthetic, however, was always advisable, otherwise the operator could not be sure that all the growths had been removed. Recurrence of adenoids often was a euphemism for improperly removed adenoids. No child would submit to an operation, and allow the operator to investigate result, and, if necessary, do more, unless methods were used little short of brutal; therefore, an anesthetic was to be preferred. At times, adenoid operations were performed where the walls of the pharynx were merely scratched, blood gushed from the nose and mouth, but the offending body was not produced. After an adenoid operation the adenoids which had been removed should always be found. Before operation it was well to locate the growths and choose the instrument according to the nature of the growths. The only after-treatment was to keep the patient quiet, in a room free from dust. The only complication was acute otitis media. The danger of this complication was lessened by following the course outlined above.

Offer of Hahnemann Medical College to State University.—Hahnemann Medical College has also made application for affiliation with the State University, and hopes for a favorable answer at the present session of the Board of Trustees. This is a homeopathic college. Dr. George F. Shears, President, says that the purpose of the request is purely a scholastic one, as they want the privilege of a great university for their students.

Tuberculosis of the Nervous System.—Dr. Julius Grinker read a paper on this subject at a recent meeting of the Chicago Medical Society, in which he said that tuberculosis of the nervous system is almost always secondary to tuberculous disease in some other organ. Brain tuberculosis occurs either as an affection of its membranes or in the form of the so-called solitary tubercle. Of all tumors of the brain, tuberculous tumors constitute the great majority, and occur with greatest frequency in childhood. Their place of predilection is the posterior fossa. The symptoms of tuberculous tumors are the same as those of other varieties. As differential points might be given the tendency of tuberculous tumors to locate in the posterior fossa, to remain latent for long times, to appear multiple, to have remissions in the symptoms. A localizing meningitis cannot be differentiated from a small tumor.

CANADA.

Convocation at McGill University.—On the afternoon of June 10 the annual convocation of the Faculty of Medicine of McGill University was held in Windsor Hall, when Dr. T. G. Roddick, M.P., the Dean of the Faculty, presided. In addition to the presentation of prizes and medals won by the students in the various years, the conferring of degrees, the presentation of diplomas and Board of Health certificates, the degree of LL.D. was conferred upon Dr. Trudeau, of Saranac Lake, N. Y., in recognition of his services in medicine generally. Dean Roddick delivered the annual address, the farewell address to the students and incidentally

Dr. J. T. Halsey delivered his farewell address, as he has resigned from the staff of McGill and has returned home to New Orleans, to take a position on the staff of Tulane University. The students' valedictory was delivered by Dr. Robertson of the graduating year.

Fifth Year in Medicine in Ontario.—A change is desired by the Queen's Medical Faculty in the regulation of the Ontario Medical Council regarding the fifth year work at medical colleges. At present only students who get positions are exempt from the special fifth year course of lectures and demonstration. Queen's desires that this be changed and that any medical graduate be entitled to try the final council examination who has been a house surgeon for a year, or has served a year with a qualified practitioner, or has attended clinics in a recognized hospital for at least a year.

Convocation at Toronto University.—The annual convocation for degrees in arts, science and medicine was held on the afternoon of June 10 in the gymnasium of Toronto University. In the evening the Chancellor, Chief Justice Sir William Ralph Meredith addressed the annual gathering of the alumni of the University. He said that during the past session there had been in attendance in all faculties of the University 2,135 students, and of this number the medical faculty had furnished 721. Next year he thought that they might expect an attendance of 2,500. Reverting to the federation of the medical faculties of Toronto and Trinity, the Chancellor said that it had proved an unqualified success, and it was satisfactory that in a faculty of 90 members there was no friction. He congratulated the medical faculty on establishing a post-graduate course, at which there is now in attendance from different points in the province of Ontario about thirty practitioners. He also commended the course in public health, which the faculty will soon establish.

Medical Appointments at the Hospitals of Montreal.—The Board of Management of the Montreal General Hospital have made several changes in the medical staff of that institution. Drs. F. S. Patch and C. W. Anderson are the only members of the present staff who will remain for another year. Dr. R. P. Campbell, who was formerly attached to the house staff of the hospital and who is at present in Germany, will succeed Dr. W. G. Turner as medical superintendent. Dr. Turner has left on a visit to England and Germany, and in the meantime the duties of medical superintendent are being discharged by Dr. R. C. Patterson. The new members of the house staff who will commence their duties in September are as follows: Dr. R. D. Forbes, anesthetist; Drs. J. L. Robinson, J. C. Fysche, W. G. Ricker, J. A. Nutter, L. L. Reford, H. H. Kerr, H. G. Wood, physicians; Drs. A. C. Rankin and W. E. Ainley, locum tenens. The Governors of the Royal Victoria Hospital have made the following appointments to the resident medical staff for the ensuing year: Admitting officer, Dr. R. King; Physicians, Drs. R. Hardisty, D. McKechnie, J. C. Meakins, W. A. Lincoln; Surgeons, Drs. H. Church, F. McKenty, J. Coffin, J. A. Faulkner, D. C. Maclachlan; eye and ear, Dr. L. C. Lauchland; nose and throat, Dr. H. O. Howitt; gynecologist, Dr. J. Gorster; anesthetist, Dr. F. D. Charman; locum tenens in medicine, Dr. J. E. Gillis; in surgery, Dr. J. W. Hutchinson; externe in medicine, Dr. J. R. Rogers.

The Prevention of Tuberculosis in Montreal.—The Executive Council of the Montreal League for the Prevention of Tuberculosis is a progressive body and it is quite possible that Montreal is doing more in the way of looking after her tuberculous than any other place in Canada. In order that every detail may be properly looked after the Executive has recently appointed several small special committees. There will be the Dispensary Committee, having for its object the establishment of a dispensary to be operated at the outset in conjunction with the general work of the League. Alderman Ames, a progressive sanitarian, is at the head of this committee, and associated with him are Drs. Dube and Finley. The Sanitarium Committee is another having for its object the establishment of one or more institutions to provide accommodation for the incurable as well as the curable cases of the disease. Mayor Laporte is at the head of this committee, and he has associated with him Dr. E. G. Daganais and Dr. A. J. Richer. A third committee is the legislative committee, having for its object the obtaining of legislative measures from the municipal and provincial governing bodies, so as to secure improved sanitation in schools, factories, etc., as well as obtaining power to enforce the notification of advanced cases of tuberculosis, the disinfection of places after death and the enforcement of the anti-spitting by-laws. On this committee are Dr. E. Pelletier, secretary of the provincial Board of Health, and Dr. Laberge, M.H.O., Montreal. The fourth important committee is the Royal Commission Committee for the purpose of urging on the Federal Government the advisability of appointing a Royal Commission, composed of not more than five members, to study the scientific and social aspects of the tuberculosis problem, and also the best methods to be adopted in this country for staying the progress of the disease. Dr. E. P. Lachapelle and Dr. T. G. Roddick will be the medical members of this committee. Thus it will be seen that the Montreal League is fighting the battle against tuberculosis in a systematic manner, which will be sure to be effective and productive of the very best results.

GENERAL.

Fourth Pan-American Medical Congress.—The next meeting of the Pan-American Congress will be held in Panama the latter part of December. The Pan-American Congress meets every three years. It was started by Dr. William Pepper, of Philadelphia, Dr. C. A. L. Reed, of Cincinnati, Dr. Albert Vander Veer, of Albany, and Dr. H. L. E. Johnson, of Washington. The first meeting was held in Washington in September, 1893, the second in Mexico in 1896. The third was to have been held in Venezuela in 1899, but was given up on account of the war in that country. The place of meeting was changed to Cuba, but had to be postponed until 1901 on account of the fever there. These meetings have always been well attended, and it is thought that Panama will be an interesting place for the convention. Further particulars will be sent out from time to time to the journals, together with notifications of the different officers appointed to represent this and other countries.

Yellow Fever.—Dr. Edward Souchon, president of the Louisiana State Board of Health, is in Washington in consultation with Surgeon-General Wyman and other renowned sanitarians. He does not consider the yellow fever problem settled. The excellent system of maritime quarantine and inspection, has prevented its ingress, but there has got to be an equally good system of land quarantine if we are to avoid danger from Mexico. A long frontier with only a shallow river to cross facilitates the spread of fever from that country. At the present time the disease has made its appearance in one or two Mexican localities. Curiously enough, too, the time of the appearance of yellow fever has changed considerably. Some years ago it was customary for it to show in May or June, but latterly it is as apt to manifest itself in August or September.

The Exhibits at Atlantic City.—To those who remembered the orderly and well-arranged exhibit of drug

manufacturers, publishers, instrument makers, etc., at Saratoga year before last and the excellent showing made at New Orleans last year, the exhibit this year was far from being satisfactory or up to the standard. It was badly arranged, inordinately crowded and not as representative as in the few years past. Some of the most representative drug firms had no exhibit at all, and even those who were there were too crowded to make an adequate showing. There is unquestionably a function of much importance in these exhibits. Particularly valuable is it to see the recent instruments, new forms of electrical appliances, new vibratory machines, new books, and even new remedies, if non-secret in their composition. A few features of special interest attracted our attention. The excellent showing of sick-room apparatus, by Meinecke, bed pads, etc., suggest that the Association authorities could encourage an extension of this type of advertising. The goods shown are useful to the physician and appreciated by the patient. In this line an ingenious commode bed was exhibited by a Dr. Heatley, of Glasgow. It was so arranged that a patient confined to bed did not have to move from a commode that was mechanically put in place beneath him. It seems worth trying, so that the limits of its usefulness may be determined. The various forms of vibration apparatus were objects of much attention. They merit careful examination, for vibratory massage has come to stay in therapeutics. Moreover our patients demand that the physician shall *do* something for them—other than give them drugs. The electrical exhibits were not as extensive as in former years.

Dr. Rush Statue Unveiled.—A bronze statue of Dr. Benjamin Rush, the noted Pennsylvania physician, philanthropist and patriot, presented to the United States Government by the American Medical Association, was formally unveiled last Saturday on the grounds of the Naval Medical Museum and accepted by President Roosevelt. Many members of the American Medical Association were present, as were also members of the Cabinet and other officials. Dr. J. C. Wilson, of Philadelphia, on behalf of the association, delivered a fitting tribute to Dr. Rush. In his speech of acceptance President Roosevelt said in part: "I accept, on behalf of the nation, the gift so befittingly bestowed by one of the great professions—this statue of a man who was eminent not only in that profession, but eminent in his service to the nation as a whole. Dr. Benjamin Rush was not a specialist in the modern sense. He could not be. There were not any specialists in the modern sense, as you pointed out. There was no possibility of there being such. But I would like, in this age of specialization, to say one word in the way of a short sermon to eminent specialists. To-day no specialist in a democratic country like ours can afford to be so exclusively a specialist as to forget that one part of his duty is his duty to the general public and to the State. Where government is the duty of all, it of course means that it is the duty of each, and the minute that the average man gets to thinking that government is the duty of somebody else, that minute the republic will begin to go down. It is a fortunate thing for our country that we should have before us the lives of men like Rush, who could take a part in our public life as distinguished as is implied by his having been a signer of the Declaration of Independence, and yet to do it without a particle of neglect of the man's own proper duties."

OBITUARY.

Dr. V. H. Moore died at his home in Brockville, Ont., on June 8, at the age of fifty-six years. He had been in failing health for the past few years, but recently had sufficiently recovered to resume his practice. He was stricken suddenly with heart failure. The late Dr. Moore was graduated from Queen's College, Kingston, in 1870, and practised continuously from that time in Brockville. He devoted much of his time and energy to Queen's, of which he was a stanch advocate and champion. In 1889 he became vice-president of the College of Physicians and Surgeons of Ontario, and president in 1890. He was also made a Fellow of the Royal College of Physicians and Surgeons of Kingston in 1890. He was made an LL.D. of Queen's in 1903, and was a past president of the Canadian Medical Association.

Dr. Rollo Campbell, of Montreal, a prominent young practitioner of that city, and a son of Dr. F. W. Campbell, dean of the medical faculty of Bishop's College University, died last week in that city of typhoid fever. Deceased was about forty years of age and was graduated from Bishop's College in 1886 with honors, and later studied in Edinburgh. From the time of his graduation Dr. Campbell was connected with the teaching staff of his alma mater, and for many years was on the consulting staff of the Montreal Dispensary. He was also one of the assistant surgeons of the Western Hospital, and surgeon of the Fifth Royal Scots.

SOCIETY PROCEEDINGS.

THE AMERICAN MEDICAL ASSOCIATION.

Fifty-fifth Annual Meeting, held at Atlantic City, N. J., June 7 to 10, 1904.

SECTION ON MEDICINE.

Second Day—June 8th (*Continued*).

(Continued from Page 1143.)

Arteriosclerosis and Angina Pectoris.—Dr. William Osler said that though arteries are usually not associated with painful conditions there are a number of arterial lesions that give rise to severe pain. Edward Jenner, the discoverer afterward of the value of vaccination, was the first to find at autopsy the arteriosclerotic changes of the coronary arteries that are so commonly associated with angina pectoris. Dr. Osler says associated with advisedly, for there are cases of bad degeneration of the heart arteries and their symptoms of arteriosclerosis without any symptom of angina, and on the other hand a certain number of cases of true angina with fatal issue without any changes in the coronary arteries. Changes in various arteries of the abdominal cavity may give rise to attacks of paroxysmal pain resembling angina. On the other hand it must not be forgotten that true angina with lesions in the heart may give rise to pain in the abdomen deserving the name angina abdominis.

Other Arterial Pains.—In migraine there is often an arterial element perhaps consecutive to the attacks but with degenerative associations. The numbness and tingling associated with arteriosclerosis in those of advancing years may give rise eventually to the painful forms of Weir Mitchell's disease. There is a painful conditions of the legs which merits the name of angina cruris rather than that of intermittent claudication which has been given to it. It is associated with degenerative changes of arteries. In old people with arterial changes there is apt to be discomfort in the legs and these same phenomena accompany Bright's disease after arterial changes have occurred and also are seen in diabetes.

Syphilitic Angina.—Dr. Osler considers that there is a definite group of cases of angina dependent on changes in the arteries in and near the heart associated with syphilitic changes. The lesions are noted charac-

teristically at the root of the aorta and at the openings of the coronary arteries. The condition is found usually in young men under thirty-five years, with a clear history of syphilis. The therapeutic outlook in these cases is so hopeful that Dr. Osler thinks they should be emphasized lest any of them should be missed, for a mistake in diagnosis might mean loss of life.

Treatment of Arteriosclerosis.—Dr. J. M. Anders, of Philadelphia, said that the treatment of arterial degeneration must be first of all preventive. Where hereditary elements are at work prophylaxis should begin very early in life. In general there must be avoidance of all excesses. Alcohol in quantities and excessive consumption of nitrogenous foods are fruitful sources of arteriosclerosis. Besides excess of manual labor must be avoided, for it is very generally accepted now that overwork, especially physical exertion to the limit of strength and endurance, is one of the most potent factors in the degeneration of arteries. Dr. Anders considers that the present tendency to overdo athletics at colleges and universities is almost sure to impair seriously the health of the rising generation, and this impairment will be brought about mainly through the arteries. The medical profession of this country should consider it a precious duty to warn young men and those to whose charge they are committed of the serious dangers impending in this matter. Once degeneration of arteries has begun it is indeed difficult to prevent its progress, but absolute prophylaxis is possible.

Physical Therapy.—Even after arteriosclerosis has begun certain things can be accomplished for its relief. The sluggish circulation may be stimulated by warm baths and by gentle massage. For many, part of the difficulty which favored the development of arteriosclerosis is due to the fact that toxic substances in the blood are not properly diluted by a sufficiency of fluid. All arteriosclerotic patients in early stages should be advised to drink plentifully of water—a habit which it will very often be found they have never had. Where the sclerotic changes are more advanced, however, the movement of large quantities of fluid in the circulation becomes quite difficult and then this advice as to free consumption of fluids must be given with more circumspection.

Etiology of Arteriosclerosis.—Dr. Alfred Stengel, of Philadelphia, in opening the discussion, said that the cause of the condition is not single nor the combination of causal elements yet understood well. Alcohol and overwork are important, though the basis of the pathological changes may originate in one of the infectious diseases such as typhoid fever. Years ago Dr. Stengel was surprised to have Sir Wm. Broadbent say that the convalescence from typhoid fever should be prolonged even to a year or eighteen months. Now he understands better the necessity for this. Dr. Stengel considers that the modern overcultivation of athletics is sure to prove a fruitful source of arterial degeneration in some of the most promising of the rising generation.

Responsibility and Arterial Degeneration.—Dr. Frederick C. Shattuck, of Boston, said that not alcohol alone or overwork alone but a combination of factors produces arteriosclerosis. In Scotland and in Scandinavia much alcohol is consumed, yet these countries are not especially likely to have a number of deaths from arteriosclerosis. There life is taken more quietly. It is the rush and stress, the Sturm und Drang of existence, as the Germans call it, which is so noteworthy in America that causes early degeneration of arteries. Dr. Shattuck believes that a series of autopsies on the captains of industry would show this. It is, however, not responsibility itself that is so serious in these cases but the fact that responsibility is not well borne. It is worry, not work, that kills, and the path of death is in this case failing organic involvement elsewhere through the arteries.

Inseparability of Vessels and Kidneys.—Dr. Kraus, of Memphis, Tenn., said that the beginning process of sclerosis in the arteries is a split in the intima with subsequent formation of connective tissue. This is undoubtedly due to high tension, but it is manifestly impossible to separate the kidneys and the vessels in the process. The retention of excrementitious products seems to favor the increase of blood pressure, while any degeneration of arteries affects also the delicate arteries of the kidney structure. Infectious diseases, malaria and yellow fever, quite as well as some of the others mentioned, serve to begin the process which then progresses with every occasion.

Dr. Stockton, of Buffalo, said that for treatment purposes the diagnosis must be made early. Progress may be arrested even when the disease is far advanced. The nitrites are valuable but must be given frequently; nitroglycerin every hour. The iodides are also valuable remedies.

Mitral and Tricuspid Stenosis.—Dr. Judson Daland and E. L. McDaniel, of Philadelphia, collected 186 cases of associated tricuspid and mitral stenosis and discussed their symptomatology. Most of them seem to occur in hearts overdistended as the result of attempts at compensation after endocarditis and simple mitral disease. The mechanism of the associated lesions is apparently essentially protective.

Pleural Effusion in Heart Disease.—Dr. J. Dutton Steele, of Philadelphia, pointed out that hydrothorax due to cardiac disease occurred more frequently on the right than on the left side. In searching for the reason for this Dr. Steele considers that the causative factor is the pressure exerted upon the vena azygos major not directly but by the pulling of the enlarged heart upon the vena cava. Such painless effusions into the thorax always point to the existence of cardiac disease. The fluid nearly always accumulates rapidly after tapping. It seems better, however, to tap, than to have recourse to drugs for the purpose of securing its removal by other means. Dr. Steele reported a series of cases of hydrothorax, showing the position of the lesion and the course of the case.

Prolonged Delirium in Pericarditis.—Dr. E. M. Green, of Easton, Pa., recalled attention to the fact that pericarditis frequently gives rise to protracted delirium and that this symptom may in the absence of other noteworthy signs sometimes call attention to the possibility of pericarditis being present. Dr. Green reported a case of continuous delirium for five weeks not accompanied by marked fever though there was endocarditis. The patient recovered completely and has remained perfectly well without any untoward sequelæ ever since. Within a few months after recovery he was able to exercise freely at an elevation of 10,000 feet.

Limitations of Digitalis.—Dr. Frank Jones, of Memphis, Tenn., discussed the limitations of digitalis in heart disease. In mitral regurgitation digitalis is the most helpful of drugs whenever symptoms are present. On the other hand, in aortic regurgitation it is likely to do more harm than good. The false principle of giving digitalis whenever there is heart disease with symptoms, Dr. Jones considers, cannot be condemned too much. In mitral insufficiency it is the right heart that suffers and the toning up of the heart muscle as well as the toning up of heart nerves are important indications. On the other hand, when there is passive hyperemia and venous stasis the condition is sure to be benefited by digitalis. In aortic regurgitation, however, the left ventricle, owing to the thickness of its muscle

and its capacity for development, is able to compensate up to the limit of vitality and maintain the compensation for a long time. To further whip this willing muscle into activity is like whipping a willing horse overloaded at the foot of a hill.

Aortic Conditions.—As a rule, in disease of the aortic valves there is accompanying arteriosclerosis with involvement of the coronary arteries. Under these conditions the blood supply to the heart is much weaker than it should be. If digitalis be administered the heart is nevertheless asked to do extra work, though it is already in need of nutrition for the work that it is doing. When compensation fails then the left ventricle goes all to pieces; not one part more than another, but everywhere, as Dr. Holmes' wonderful "one-hoss shay." Dr. Jones considers that there is never any justification for the use of digitalis in aortic regurgitation, no matter what the condition of the heart muscle may be. Not infrequently, however, in aortic regurgitation there develops a condition of sleeplessness with dyspnea with marked anxiety. In these cases there is need of a stimulant and, owing to the association of digitalis with heart disease, there is a temptation to use the drug. Fatal results in such cases from its use, however, are not uncommon. Dr. Jones has found nitrate of strychnine of great service in such cases and the indications are for this substance, which tones up the nervous system through the heart and through the vagus.

Morphine with Digitalis.—Dr. James Tyson, of Philadelphia, said that he agreed with Dr. Jones in the main, though as the proof of the pudding is in the eating so the proof of remedial measures is in their application to a special case. Dr. Tyson finds one exception to the general law with regard to the danger of digitalis in aortic disease when there is loss of compensation and both aortic and mitral valves are leaking. If patients are then put in bed and given small doses of morphine, usually not more than one-eighth grain, to which atropine is added, the resulting quietude will soon be noticed. If now digitalis in small but gradually increasing doses be administered without looking for effects too soon, certainly not before the second or third day, the good effects will be surely noted. It is not easy to know the theory on which digitalis does good in such cases, but of the correctness of the practice there is no doubt.

Combination of Aortic and Mitral Disease.—Dr. Richard Cabot, of Boston, said that theory must count for little in the application of drugs for heart disease, and that experience is everything. Personally he has found that digitalis in mitral disease nearly always does good. In aortic regurgitation it as constantly does harm. This is especially true in old persons whose arteries are degenerate or in advanced forms of aortic disease. In young persons suffering from mitral and aortic disease due to rheumatism or some such infectious process digitalis undoubtedly does good, but not so much good as in primary mitral disease. Other combinations of aortic and mitral disease seem also to be benefited by the use of the drug if its administration is not delayed until too late in the case.

Heart Strong, Compensation Failing.—In certain cases circulation failure becomes manifest notwithstanding the fact that the heart continues to beat strongly. In these cases it is important to take off the brakes. This can be done by relieving the circulation of some of its contents by means of purgation and by free diuresis. This method of treating such circulatory disturbances was very familiar to the older physicians and represents the mechanical solution of a serious problem, but is not often employed by the modern physician, who thinks too much of specific drugs for symptoms.

Importance of Rest.—Dr. De Lancey Rochester, of Buffalo, said that he is quite in accord with Dr. Jones as regards the general principles of the use of digitalis in heart disease and considers that a very important element in the treatment of heart affections is rest. The case mentioned by Dr. Tyson, in which there is decided break in the compensation with a combination of aortic and mitral disease will be helped just as much by rest as by digitalis with rest. Small doses of digitalis are very slow to act and do not accomplish near as much as the absolute rest in bed. Dr. Rochester considers that mitral stenosis is also an indication for the use of digitalis and, indeed, to quite as great an extent as is mitral regurgitation. Digitalis, by lengthening both systole and diastole of the heart, gives a longer time and thus enables the auricle to accomplish its work notwithstanding the obstacle in the way.

Dangers of Digitalis.—Dr. S. C. James, of Kansas City, said that to most physicians the word heart disease means at once the use of digitalis; as a consequence digitalis has probably done more harm than good, though there is no doubt that it is a very valuable drug. It would be much better for physicians and their patients, however, if the word heart disease were always associated with the idea of free movements of the bowels, the use of laxatives instead of digitalis. Dr. James has found compound licorice powder and compound jalap powder of more service than digitalis in advanced cases with severe symptoms.

Dr. E. F. Wells, of Chicago, said that severe cases of heart disease are much more amenable to treatment than is usually thought. Great benefit can be secured for lost compensation. When the patient is found with limbs much swollen, sitting in a chair, unable to sleep lying down, and resting very little in any way, morphine in small doses, sometimes not more than one-sixteenth of a grain being necessary, will secure sleep for the patient for hours. Better than any other remedy in conjunction with this, is a cathartic that will produce watery movements. Dr. Wells prefers elaterin, grain one-eighth to one-tenth every three hours, until six or eight watery stools are secured. If, after this, water is removed from the feet by means of punctures, the patient will be made quite comfortable. Then, after forty-eight to seventy-two hours, digitalis may be given with good results.

Venesection.—Dr. J. Sailer, of Philadelphia, said that in his observation aortic disease is more frequent than mitral disease in the ratio of about three to two. Hence the danger arising from the use of digitalis, if the existence of heart disease is to be considered a sufficient indication for the employment of that drug. Personally he believes in taking off the brakes but does not consider that violent purgatives, or the use of diuretics, is always to be counseled. The old writers counseled venesection in these cases and it is wonderful how much can be accomplished for the relief of a laboring heart in advanced stages of heart disease, by free venesection.

Ergot in Heart Disease.—Dr. A. T. Livingston, of Jamestown, N. Y., said that in advanced cases of heart disease, there is prone to be a relaxation of the unstriped muscular fiber in the walls of the arteries. A large amount of the energy exerted by the heart goes to waste then because of the flabbiness of the arteries. This can be overcome by the use of ergot which contracts and tones the relaxed muscle fiber in the vessels all over the body and thus makes the heart efforts much more effective than they were before. Unfortunately ergot has come to be associated with only one use in medicine and it is very seldom thought of in relation to a laboring heart with lack of compensation.

Degeneration of Arteries.—Dr. E. M. Webster, of Chicago, said that aortic disease is very often a result of

the spread of some infectious process, or perhaps a syphilitic process, from the arteries. In such cases no drug could possibly do more harm than digitalis.

Dr. Coleman, of Iowa, said that digitalis does good in cases of aortic disease not associated with arterial change. When there are degenerative changes in either the vessels or the heart itself then digitalis must not be used, or it will do harm. In simple aortic valvular disease, however, without vascular changes, the drug may be of good service.

Dr. Anders said that daily purgation in heart disease is more important than almost any other detail of treatment.

Pitch of Respiratory Sound.—Dr. Charles E. Quimby, of New York, said that while pitch is the element of sound in respiratory diseases most relied on for diagnostic purposes, the common statements to be found in text-books of physicial diagnosis as to the pitch of the sounds heard in normal and consolidated lungs are erroneous. Dr. Quimby showed that the pitch of normal respiration should be stated as inspiration having a high and expiration a low note. During consolidation, the pitch of inspiration is lowered until inspiration and expiration are of the same pitch. Though it is the custom for practically all teachers of physical diagnosis to talk of the expiration in affected conditions of the bronchi, and especially in consolidation as being higher than inspiration, this is never true. Nor is it true in such conditions as emphysema. The laws of acoustics with regard to the pitch of notes varying according to the length and general size of tubes is in accord with Dr. Quimby's differing statement of the real condition of affairs.

Dr. Richard Cabot, of Boston, in discussing Dr. Quimby's paper, said that personally he has written on the subject of physical diagnosis and having spent much time at music, considers that he is in a position to judge of the pitch of breath sounds. In his teaching and writing he has considered that the ordinary statement is correct. Dr. Cabot calls attention to the fact that the pitch of a violin string may be changed without shortening or lengthening it merely by the greater pressure applied by the bow.

Dr. Quimby, in closing the discussion, said that the example of the violin string is unfortunate, since the laws of acoustics as applied to strings in vibration are very different to the notes of a vibrating column of air within a tube, the pitch of which depends absolutely upon the length of the tubes. He has never found that any one who would take the pitch of the respiratory sounds with a tuning fork would fail to agree with him in his radical difference of opinion from those who ordinarily teach physical diagnosis. Very much has been said with regard to sounds in physical diagnosis that is of no value. Some time ago two important teachers of physical diagnosis in New York were teaching within a short distance of each other, that the pitch of the percussion note in emphysema was higher than normal, the other that it was lower than normal. Fortunately for professional dignity and student faith both of them were correct and each of them was wrong.

THIRD DAY—JUNE 9TH.

SYMPOSIUM ON GALL-BLADDER DISEASE.

Etiology of Cholelithiasis.—Dr. Walter L. Bierring, of Iowa City, Iowa, said that the origin of stones in the gall-bladder can be traced in practically all cases to some preceding infectious disease. It might seem as though the gall-bladder by its position was protected from the invasion of bacteria from the digestive tract and that the qualities of the bile itself would further aid in its protection. As a matter of fact, however, the entrance of infectious material is very common. In over 50 cent. of the fatal cases of typhoid fever, in which this point has been carefully investigated, these bacilli have been found in the gall-bladder. On the other hand, traces of the bacteria are constantly found in gall-stones and practically always they form around bacterial products as a nidus. It is not the mechanical precipitation of salts from the bile that used to be thought of, but a true microbic process. Ordinarily the presence of gall-stones leads first to a prevention of contraction on the part of the gall-bladder and thus prevents the proper drainage of the viscus. As a consequence there is an increase of opportunities for infection and cholecystitis is not uncommon when gall-stones are present. By some it is considered that the activity of gall-stones is practically always preceded by cholecystitis and that this is the beginning of the discomfort. As a matter of fact, however, gall-stones may remain undisturbed during a long life and be found only at autopsy. This is true both for large single stones and for many smaller ones, so that it is evident that some other causative agent must be present to arouse stones into activity. The same thing is true with regard to the general etiology of gall-stones.

Contributing Causes.—One of the most important contributing causes has something to do with the sex of patients, since gall-stones are much more common in women than in men. The proportion is three to one or five to one according to various observers. Indeed, gall-stones are like floating kidney, a special attribute of the sex. There are certain good reasons for this. The wearing of the corset constricts the liver and interferes with the circulation of bile, thus preventing proper drainage of the biliary system and facilitating the occurrence of bacterial concretions. Child-bearing, sedentary habits and constipation disturb abdominal circulation and intra-abdominal pressure in various ways, so as to produce like effects. After sex an important predisposing quality is obesity. It occurs particularly in connection with habits of free eating and it is often complicated by nephritis, which is, indeed, the common cause of fatality in operations on the biliary tract. As the result of the over-eating of fat, bile salts become rich in certain salts that may be precipitated and lead to the formation of stones. For a time olive oil was considered advantageous in the treatment of gall-stones, but it has been shown that when dogs are fed on fat almost exclusively small concretions occur in the gall-bladder without infection being demonstrable and no bacillary products are found in the stones themselves. As a rule, some disturbance of digestion seems to be associated with the formation of gall-stones, and this should prove an important hint for the prophylaxis of this pathological condition.

The Gall-bladder, Stomach and Intestines.—Dr. Bertram W. Sippy, of Chicago, discussed the relation of diseases of the gall-bladder and bile ducts to disorders of the stomach and intestines. As the bile passages are situated so near the stomach and upper part of the intestines confusion of symptoms is not unusual. Gall-stones may simulate cramp of the intestines and may bring about vomiting and nausea or even bloody vomiting with a suggestion of ulcer of the stomach or may suggest stenosis of the pylorus. It may even bring about reflex dilatation of the stomach with delay in the progress of food and consequent tetany. The reflex action of the irritation of gall-stones may be seen very well in the epigastric distention noticed after an attack of gall-stone colic which is due to paresis of the muscle of the intestinal walls. This may go even to the extent of paretic ileus on a reflex basis. On the other hand, reflex cramp in the pylorus may be set up simulating a stenosis of this portion of the intestinal tract.

Stomach Symptoms.—The acidity of the gastric secretions has been said to be increased as the result of the irritation of the presence of gall-stones. This would add another element of confusion as regards the differential diagnosis of ulcer of the stomach, since both diseases present pain and tenderness. This hyperacidity, however, has not been seen in a sufficient number of cases to be considered absolute; lactic acid is said sometimes to be present, but unless, where there has been some dilation or motor insufficiency in the stomach, this must be a surprise. Certain pathological conditions in connection with the bile tract are important. Adhesions to neighboring structures, which, of course, will nearly always involve the stomach in some way, are said to occur even after simple cholangitis. When gall-stones are present adhesions are very frequent and are said to occur in 75 per cent. of all cases. The gastralgic pains which are so often said to be due to adhesions in these cases are not necessarily so, and may be relieved by operation. Bands of obstruction which are sometimes found at operations upon the stomach and intestines, can nearly always be traced to a severe cholecystitis, the history of which will be found some years before.

Simulation of Stomach Disease.—Affections of the biliary tract may simulate tumor of the stomach and be considered to be cancer of that organ. As the result of the conditions which developed in connection with gall-stone disease, benign stenosis of the stomach may occur and patients be allowed to die under the false impression of malignant disease, though they are really suffering from a relievable condition. Fistulæ of the gall-bladder and ducts may occur in connection with nearly every part of the intestinal tract and are much more frequent than used to be thought. Occasionally, affections of the stomach in association with a gall-bladder disease are quite tractable, even by medical means. When the contraction of the pylorus is reflex, patients may be put to bed and by means of rectal feeding complete rest given to the upper part of the digestive tract. After a time it will be found that small quantities of milk can be taken and that the motor sufficiency of the stomach is resumed, even in cases where sarcinæ have been present. Gradually the amount of food taken may be increased and so the irritative contraction of the pylorus overcome. At times, too, when the stones are removed from the biliary passages the plastic exudate thrown out around them may be reabsorbed. The outlook then is not always as alarming as has been thought.

Gall-stones and the Intestines.—Occasionally, surprising as it may seem, gall-stones occlude the intestinal lumen and cause symptoms of obstruction. Fifty per cent. of these cases perish. On the other hand, ileus may be set up, not entirely because of the size of the stones, but because of the irritation it produces. One stone, 9 by 13 cm., passed to the anal region before it was stopped. Usually the place of stoppage is at the ileocecal junction where the lumen of the intestine is smallest. The ileus which occurs is due to the paresis of the intestinal walls as the result of irritation. Very large stones ulcerate their way from the gall-bladder into the intestines and the process is so slow that there may be no history of the passage of gall-stones. In gall-stone ileus there is usually less shock and prostration than in other forms of intestinal obstruction, and while there is fecal vomiting there is usually also a number of passages from the rectum. As to the differential diagnosis of ulcer of the stomach and duodenum and cholelithiasis, it is prone to be very difficult. Icterus is sometimes said to be a pathognomonic sign of gall-stones, but in reality is relatively rare, occurring, according to Riegel, only in 10 per cent. of the cases of gall-stones. Vomiting of blood, on the other hand is not pathognomonic of ulcer, for it does not occur in all ulcers, and has been noticed in gall-stones without any stomach lesion. Examination of the stomach contents may be of assistance. If the secretions are normal and the motility good after a testmeal, it speaks against any affection of the stomach and points to gall-stone disease. All symptoms of these cases, however, must be studied in order to make the differential diagnosis of these affections.

Surgical Diagnosis of Gall-bladder Disease.—Dr. Parker Syms, of New York, said that one out of every ten persons has gall-stones. In only about five per cent. of those who have them, however, are there any symptoms. Most of those who have any symptoms present classical types of the disease. Some patients, however, have anomalous symptoms and the true significance of their affection is missed. As Dr. Lambert, of New York says, the gall-bladder represents a mysterious realm of surgical romance in the right upper quadrant of the abdomen. The most characteristic symptom of gall-stone, is pain which may be relieved by eating, which occurs most often when the stomach is empty and the relief of which is usually followed by the passage of gas from the intestine. The character of the pain is rather typical. Patients describe it as a boring through the abdomen to the vertebræ. The maximum of pain is felt just below the free border of the ribs. The point of greatest tenderness, as pointed out by Mayo Robson, occurs on a line from the ninth rib of the umbilicus, and is definitely located here, even when for some reason there is displacement of the gall-bladder because the tenderness is really due to nervous reflexes. According to Kehr and others, pain is due to the inflammatory condition of the gall-bladder. According to Murphy, it is due to the irritation of the stone itself. Subsidence of pain is usually welcomed as the end of an attack. As in appendicitis, however, it may be due to gangrene, or perforation of the stone through the bile tract, with serious results. At one time it was thought that the X-rays would prove a valuable diagnostic aid in the recognition of gall-stones. This agent has proved unsatisfactory, however; whenever the X-ray verdict is positive it settles the question; negative X-ray evidence, however, is not conclusive.

Differential Diagnosis of Gastric Ulcer.—Owing to the fact that gall-stones may produce acute indigestion, they may simulate gastric ulcer very completely. Usually, however, the point of maximum tenderness in gastric ulcer is higher up and is in the median line in connection with ulcer. The chill and fever common in gall-stones are absent in ulcer. The pain of ulcer occurs after the taking of food, while gall-stone colic occurs at night when the stomach is empty. The absence of tenderness at Mayo Robson's point is of value.

Differential Diagnosis of Appendicitis.—When the appendix is displaced it may be necessary to diagnosticate between affections of this order and the gall-bladder. There is a difference in the character of the pain, which is not so boring in appendicitis and which does not radiate toward the shoulder as does gall-stone colic. There is besides in appendicitis an extreme rigidity of the right rectus muscle. Reflex vomiting is more common in appendicitis and there is an absence of any tendency to jaundice. Where the condition is not fulminant a wait of twenty-four hours will usually determine the question, since the gall-stone patient will usually be much better at the end of that time than the sufferer from appendicitis.

Other Painful Abdominal Conditions.—The differential diagnosis of stone in the kidney may be made

by the different character of the pain, its different radiation and the absence of tenderness at the Mayo Robson point. Pancreatic colic causes pain in the median line or on the other side of the abdomen and usually with the presence of fat in the stools. Phlebitis portalis, that is, inflammation of the portal vein, may occur after neglected appendicitis and is diagnosed by the history of the patient and by the existence of a septic temperature.

Local malignant disease of the stomach may be differentiated by careful examination, but often an exploratory incision will be necessary. Empyema and subphrenic abscess are sources of confusion in diagnosis, but usually the general condition of the patient, the temperature curve and the extension of dulness upward in the liver region are sufficient to make the differentiation. It must not be forgotten that in certain cases of angina pectoris there may be acute abdominal pain, referred to the region above the umbilicus rather than to any part of the thorax. In these cases an examination of the heart will usually disclose the existence of a serious heart condition with which the pain is associated.

Surgery of Gall-stones.—Dr. Lucius W. Hotchkiss, of New York, said that while much has been attempted in the matter of dissolving gall-stones by various means, little if anything has been accomplished. It has been found that when the gall-bladder is healthy, as in dogs, gall-stones placed therein are gradually dissolved. Once the gall-bladder has become infected, however, stones are not dissolved. It has been thought the use of bile might prove of service in aiding the gall-bladder to dissolve stones and to some extent good has been accomplished in this way. It is, however, of very limited application: at one time was considered to be of great service but has not fulfilled the hopes of those who used it and indeed seems to have a tendency to increase the amount of bile salts and thus lead to the deposition of material in the gall-bladder. The Carlsbad cure still does good, and it is evident that a plentiful supply of water with a certain amount of laxative action is the best medical therapeutic measure there is for gall-stones. At the present time, the treatment of gall-stone disease lies between this form of hydrotherapy and surgery. It is encouraging to find that at the present time there is much less tendency to the production of the opium habit and much more recourse to active surgical measures.

Early Diagnosis.—The future of the proper treatment of gall-stones lies in prompt diagnosis rather than in an improvement of the technical operation. Where cases are uncomplicated, the mortality of operation at the present time is low and is mainly accidental. Danger lies in delay in recourse to surgery, since complications develop. Where there is only one small stone there may be a very slight tendency to disturbance and this may be relieved by the passage of the stone. Even where there have been several attacks with stones passed at each one but at long intervals, surgeons are inclined to wait. Where, however, attacks are recurring at shorter and shorter intervals, then the ideal operation is cholecystectomy early in the case and the mortality of such operations is not high. Lilienthal has done 37 such operations, with only one death and that for another reason than the operation itself. It is evident then that surgery must be the recourse of those who would wish to treat this serious condition rationally and that the decision to permit surgical intervention early is almost sure to prove not only life-saving, in many cases, but also saving of complications and serious sequelæ.

(To be Continued.)

SECTION ON SURGERY AND ANATOMY.

SECOND DAY—JUNE 8TH.

(Continued from Page 1148.)

Factors in the Mortality of Appendicitis.—Dr. F. LeMoyne Hupp, of Wheeling, W. Va., in the discussion, said that one of the factors determining a fatal issue, where there has been a beginning diffuse septic peritonitis antedating the surgical interference, is a continuance of this process. Of the seven cases of this kind that have come under his care in recent years, and receiving operation, two have died in this way. Practically all other deaths in these cases are a result of well-known and recognized causes. Within the past four weeks there had come under his care a patient with appendicitis, who presented an unusual feature in his experience in these mortality factors. A boy, fourteen years of age, was admitted to his service in the City Hospital of Wheeling, W. Va., who had been treated by his family physician for typhoid fever for a period of eleven days prior to admission. His symptoms seem to have been typical up to the tenth day, when there was discovered an induration and localized tenderness in the right iliac region. On the day of admission (May 6), under chloroform narcosis, the usual incision was made and about an ounce of very offensive pus was removed from the retrocecal region. In the washing there escaped a tubular segment of the appendix vermiformis, much resembling a macerated piece of macaroni. A suspiciously dark area was detected over the cecum. Because of the profoundly collapsed condition of the patient no further interference was deemed advisable. Well-directed drainage was established and the patient removed from the table. Forty-eight hours after the operation the dressing was saturated with a dark, offensive, coffee-grounds fluid, and at times there seemed to be some fresh-looking blood with the exudate. The drainage strips were removed and there welled from the depths of the wound a quantity of decomposed, black blood clots. Collapse and death followed three days after the operation. The real interest in this case centered in the autopsy. No remnant of the appendix was discernible. A very extensive extravasation of old decomposed blood was found distending the cecum, ascending colon and part of the ileum. Peyer's patches exhibited the typical typhoid lesion and an eroded vessel in the base of one of these ulcers demonstrated the seat of the hemorrhage and the cause of death.

THIRD DAY—JUNE 9TH.

The Anatomy of Inguinal Hernia.—Dr. D. N. Eisendrath, of Chicago, presented two very large and perfect models illustrative of the anatomy of the inguinal region. He said that he had found these of great use in his teaching work and stated that sweater cloth of different colors was the best material for the purpose. He stated that the weak regions in the inguen depended on two factors, viz., (1) upon the degree of arch of the deeper muscles; and (2) upon the size and strength of the inner oblique. He gave an interesting and detailed description of the history of the operation for hernia and illustrated his method of teaching with the models.

Andrews' Technic.—The sum and substance of Andrews' operation is that he sews the external oblique, the internal oblique and the transversalis to Poupart's ligament behind the cord. He then places an imbrication stitch, which creates a fold of the aponeurosis of the external oblique about the cord; this latter structure, in other words, lies in the position usually occupied by it after the application of the Halsted technic, except that it is protected from injury, as it is not by

the Halsted method, by being folded under the tissue of the external oblique. The reader said that he believed that this operation gave greater strength to the weak parts without in any way sacrificing the cord, than any other known method.

Three Years' Experience with the Autoplastic Suture for Hernia.—Dr. L. L. McArthur, of Chicago, before stating the results of his 93 cases, passed around a most beautiful specimen which showed his method of separating the living ligatures from the fibers of the external oblique. As is well known, he bluntly dissects off two substantial threads from each side of the wound, which is made in a direction absolutely parallel to the fibers of the muscle. One of these is then used for the deep suture, the other for the superficial. The patients furnishing this series of 93 cases average in age from seventy-eight years to six months. The ingenious author stated in defense of the use of the living ligature that he had had an opportunity of examining the ligature after it had been *in situ* for six months in a patient who had aptly died of some extraneous disease. So far as could be observed from the histological condition of the tissue, the fibrous thread was as thoroughly alive as when it was separated from the external oblique. Furthermore, he stated that in the event of suppuration taking place, the condition would be no different from that which obtains if catgut ligature had been used. The fibrous autoplastic suture would simply die and be absorbed.

Dr. William B. Coley stated that the need for Dr. McArthur's technic had in a measure passed by. If it had come to the notice of the profession (which unfortunately it did not) ten years ago, when sterilization of absorbable materials was not so far advanced, it would have been a more invaluable addition to surgery than it at present constitutes. He believed that the kangaroo tendon prepared by modern methods could be made as sterile as the autoplastic suture, and there was this in favor of it, that it was not prepared during the time of operation.

Dr. E. W. Andrews, of Chicago, said that his method of doubling the external oblique over the cord was merely the application of an old and well-known technic to this particular operation. The principle had been employed by Mayo in his well-known operation for the relief of ventral hernia, and he believed that, while the ordinary Bassini might give equally satisfactory results in the average run of cases, still there were undoubtedly a large number of patients whose belly walls were extremely deficient. In this type of patients, the imbrication stitch allowed the triple protection of the weak area by affording a guard to the cord.

The Autoplastic Sutures Live.—It had been his privilege to see the sections reported by Dr. McArthur, and in his opinion they were very much alive at the time of the patient's death. He believed that the utilization of the living sutures had a great future, not alone in hernia, but in many other operations as well. There seemed no reasonable doubt that the living cord woven between two tissues could hold them together better than one which stayed in the parts only until union took place and was then absorbed.

Dr. Bloodgood, of Baltimore, complimented Dr. Andrews very cordially upon his imbrication method. He said that Dr. McArthur was a sort of peace commissioner in the matter of herniotomy, because he employed no definitely fixed operation, but utilized any technic for his autoplastic suture. He said that of course time was the essential test of the merits of a herniotomy technic. Transplantation of the cord was no longer practised at the Johns Hopkins Hospital. In his opinion, the satisfactory and efficient suture of the internal oblique muscle to Poupart's ligament, aside from suppuration, was the most important element in success. He believed that Andrews' method probably gave better results than any other known technic. In closing he advised the resection of a certain proportion of the veins of the spermatic cord, which in his opinion greatly favored the permanency of the operation.

Dr. Marcy, of Boston, said that his old teacher, Oliver Wendell Holmes' favorite aphorism on the anatomy of the inguinal canal was that it resembled kindling wood, "the more sticks you split, the more you may." Marcy began to advocate and to do hernia operations thirty-four years ago and from that early date to the present he had been advocating buried absorbable sutures.

Dr. Arthur D. Bevan, of Chicago, described the technic which he has gradually evolved and which he used on the majority of his cases. He said that Andrews' operation was undoubtedly of inestimable value under certain circumstances. He urged that great care should be taken not to injure the tissues any more than could possibly be helped, and to this end he advised that only the portion of the sac which lay directly in the inguinal canal should be excised, such of it as passed into the scrotum doing no harm whatever if left there. In 25 per cent. of his cases, he has employed infiltration anesthesia. In closing he urged that the sutures must all be absorbable.

Surgery of the Trifacial Nerve and Its Ganglia.—Dr. John B. Murphy, of Chicago, divided the subject into five stages: (1) Resections of branches down to the cranial foramina; (2) Division of branches within the cranium, with efforts to occlude the foramina; (3) Removal of the Gasserian ganglion, with intracranial segments of nerve; (4) Extraction of sensory root; (5) Intraneural injections. He said that although he was loath to admit it, he had been forced to the conclusion that the intracranial operation was too menacing to life to allow of its indiscriminate employment if any other technic can be devised to take its place. Of pathology, the author admitted, practically nothing is known, which, however, makes little difference to the patient. What he wishes is to obtain relief from the excruciating pain. He stated that in his opinion regeneration of the nerve after section of its root might be absolute. If such regeneration, he said, were the basis of the return of pain, some operation should be perfected to prevent it. He believed that the ganglia, which are located along the course of the nerve, particularly otic ganglion, played a very important part in pain production. He cited 11 cases in which he had employed osmic acid injections. He detailed their histories in full. This injection, he said, was practised twenty years ago, but the mistake had then been made of introducing it into the tissues and not of necessity into the body of the nerve itself. This is of absolute importance, for if the injection simply passes beneath the sheath of Schwann, no results can be obtained.

Effect of Osmic Acid Injections.—The patient first notices the diminution of pain. This gradually increases until at the end of about three days, anesthesia is complete. He admitted that the permanency of the cures which he reported was not yet assured, but stated it to be his belief that the osmic acid treatment, if properly used, would give a great deal of relief to suffering humanity.

Intracranial Neurectomy for Trigeminal Neuralgia.—Dr. Harry M. Sherman, of San Francisco, reported five operations in four patients. In three of these there was absolute recovery from pain, but one suffered the unfortunate complication of seventh nerve paralysis. In

the last two operations, which had been practised on the same patient, the root of the nerve was cut behind the ganglion. That it was certainly cut was attested to by the fact that there was motor disturbance of a very pronounced character at the moment of section, and further by the fact that section was followed by complete paralysis of the pterygoids. He stated that the technic of Frazier had been carried out, but that it had evidently failed because of the union of the nerve immediately after section. He advocated filling the wound area with normal salt solution just prior to closure, because he believed that this prevented an extensive hemorrhage and was subsequently absorbed. This would naturally limit the formation of scar tissue which develops largely from clots.

Division of the Sensory Root for Tic Douloureux.—Dr. Charles H. Frazier, of Philadelphia, said that he believed his researches had at length demonstrated without doubt the value and success of the technic of resecting the sensory root. He recommended that in those cases where the root could not easily be distinguished, a resection of the posterior portion of the Gasserian ganglion be made. This, in his opinion, would produce the same results as resection of the century root. He considered that the question of regeneration of the root after section was a closed one, because, in his opinion, it was impossible for this to take place. The results of his operations were not capable of positive interpretation as yet, however, because the time in the oldest one was twelve years and eight months, that of the most recent being fourteen months.

Dr. Spiller, of Philadelphia, said that he had invariably found marked degeneration in every part of the nerve and these ganglia when he had studied specimens removed from marked cases of tic douloureux. Inasmuch as there is this general degeneration, it seems self-evident that central is preferable to peripheral section. He advised that a portion of the root should be removed, not to guard against possible reconstruction of the same, but to insure its entire section.

Dr. Robert F. Weir, of New York, said that he had employed osmic acid twenty years ago and was very sorry to say that in his hands it had never proved at all efficacious. Perhaps the secret for this lay in the fact that he had not properly and thoroughly injected it; but he feared that the conviction, which had been forced upon him some years since, that for the relief of a serious facial neuralgia the final court of appeals must be an intracranial operation, was correct. So far as the possibility of nerve regeneration in the case of the posterior root went, he believed that it was quite possible for this phenomenon to take place. In commenting upon Abbe's method of placing gutta percha tissue between the cut segments to prevent their growing together, he recalled two cases in which he had allowed gutta percha tissue to remain in the brain. Each one of these pieces was perforated by newly formed filaments.

Dr. Horsely, of Richmond, said that in his opinion the personal factor was a very important one in determining the regeneration of nerves. He advised the employment of Cushing's technic and suggested that it should be furthered by carotid ligation. He admitted the advantages, particularly those obtained in the eye, which accrued from sensory root severance, but stated that in his opinion complete avulsion of the ganglion would be necessary in a certain number of cases.

Dr. J. H. Cushing, of Baltimore, said that for cases of the genuine facial neuralgia, there was an indirect mortality due to suicide of just about 50 per cent. For this reason, if for no other, a capital operation, which was attended by as low a mortality as the modern intracranial method had recently been shown to have, was not only justifiable, but in his opinion obligatory. This statement, he wished it distinctly understood, applied only to the profound cases of nerve involvement, through the constant pain of which the patient's life is rendered miserable. In the last 16 cases he has lost but one, the horizontal method of reaching the ganglion having reduced the mortality to five per cent.

Dr. John B. Murphy said that he believed he could recognize the real thing and that his injections had been done on genuine cases of facial neuralgia. He said that but little was at present known of the cause of interruption of nerve function. Why, for instance, should section sometimes fail, while paralysis from pressure of short duration may be permanent?

Dr. Sherman, in closing, said that there was no question in his mind that he had succeeded in severing the root of the nerve, for the reasons given. Until he had positive proof to the contrary he should continue to believe that regeneration of the posterior root after simple section as advised by Frazier is not alone possible but probable.

Laminectomy.—Dr. John C. Munro, of Boston, made an earnest plea for simplification and perfection of the technic of laminectomy. He said that most of the laminectomies which the surgeon would be called upon to perform were associated with fracture dislocations. Lloyd's dictum that patients showing evidence of a double transverse lesion should be left alone, he deemed as faulty, obsolete and most dangerous. This position was readily explained by the fact that no man can be positive in his interpretation of symptoms until the time of operation. He spoke of the pathology of suppression of function in nerves, stating that we know enough to be certain that it was not a mere degeneration. He advised operating even in chronic cases for the reason that in two such he had had most gratifying results. Truly these were the product of a long series of discouraging failures, but they were enough to justify the possibility.

Dr. Lund, of Boston, in opening the discussion of this paper, said that much of the success which was to be hoped for in the future of these operations could be attributed to the painstaking and continuous efforts of Dr. Munro to perfect the technic and to improve the impliments used in laminectomy. He said the discouraging nature of the work was well calculated to turn the activities of investigators and operators into other channels. He emphasized the danger of attempting to make a positive diagnosis from symptoms alone.

Dr. Cushing said that hematomyelia was practically unrecognizable from bone pressure occurring in the spinal cord.

The Treatment of Cold Abscesses and Sinuses in Tuberculous Disease of Bone.—Dr. V. P. Gibney, of New York, first detailed the effects of modern life and environment on the development of this class of lesions. He said that in the opinion of many orthopedic surgeons, the ground was still held that it was wise under any conditions to allow of no interference, but to hope that under protection and extension they would absorb. That in a great many cases this takes place cannot be doubted. But the fact remains that this treatment is by no means ideal. He then drew attention to the existence of the opposite class of operators who treat these abscesses on the principle that pus should be evacuated wherever found. A middle ground was to be distinguished as represented by the class of surgeons who advise aspiration of these cavities with or without the injection of antiseptics. Experience of a great many years had taught him that the best results were to be obtained by early recognition of the abscess, its immediate opening and,

in the event of the pus being sterile, its complete closure. Its technic is, however, hardly ever available. If on aspiration there is found to be a mixed infection, drainage might much better be established by the surgeon than by nature. This mixed infection is a most direful calamity.

Old Unreduced Dislocations.—Dr. DeForest Willard, of Philadelphia, said that old chronic dislocations demand much greater gentleness of treatment than the recent fall. The time would come, he hoped, when one should be able to say that the treatment of this condition had ceased to be of importance, because the lesion itself had ceased to exist. He described Allis' work in considerable detail, and concluded that in operating upon dislocations, it was essential to cut all the soft parts, which in any way interfered with the proper reduction. He would also advise an avoidance of operation in cases upon whom a number of previous operations had been made on the same site, because of the increased danger from depressions of the tissues of sepsis.

Dr. Arthur D. Bevan, of Chicago, commented on the very great value of the X-rays in diagnosing dislocations. In injuries of the more inaccessible joints, they rendered less to be dreaded the frequent complication of fracture. In operating upon the elbow, he advised the careful saving of the triceps tendon. In old chronic dislocations of the elbow, he had found the best results to arise from a resection of the head of the bone.

Dr. Joseph A. Blake, of New York, also commented favorably upon the value of the X-ray. He said that, except in very rare cases, mechanical methods of reduction were valueless and dangerous. For the shoulder, he advised the open incision, which should be placed as far forward as possible to avoid the tissue of the deltoid. He utilizes a lateral incision in the elbow-joints and stated that it had been his experience that the results of operative intervention in this region were far better than those obtained at the shoulder. This he accounted for by the fact that the shoulder girdle was freely movable. This interfered with the application of any considerable degree of force in passive movements.

Conservative Perineal Prostatectomy.—Dr. H. H. Young, of Baltimore, cited the history of the development of the operative work on the prostate as it had occurred in his hands at the Johns Hopkins Hospital. First he had done the suprapubic operation, then discouraged with this, he had turned to the Bottini technic, and finally he had become convinced that the operation of choice was perineal prostatectomy. In his series of fifty cases, he had had no deaths. He described the technic of his operation and illustrated his remarks with a beautiful series of diagrams. He considered a transverse incision through the skin to be essential. Further he believed that every effort should be made to save ejaculatory ducts and the urethra.

Prostatic Obstruction.—Dr. Parker Syms, of New York, said that the modern methods of diagnosis were, or should be exceedingly simple, except under extraordinary conditions in which the cystoscope should be employed. He reiterated his well known points of objection to the suprapubic route and to the Bottini, believing that both would soon fall into well deserved oblivion. So far as catheter life was concerned, he expressed his belief that the period of its enjoyment, which has been stated to be four years, was altogether too high. It should probably be divided by two or a greater number. He utilizes a simple median incision, opens the urethra, passes in his well known double retractor into the bladder and shells the prostate out. There is practically no hemorrhage, and the length of time needed for the technic is about seven minutes. He stated that he had recently come to the conclusion that there was no sense in keeping these patients in bed, inasmuch as the operation might justly be considered one belonging to minor surgery. He therefore allows his patients to get up in from twenty-four to forty-eight hours. In his last 34 cases he has had two deaths.

Prostatectomy by the Perineal Route.—Dr. George Goodfellow, of San Francisco, spoke of the horrors of catheter life. He said that no instrumentation of the bladder should be practised if it could be avoided. His operation is practically identical with that of Syms with one exception, that he uses no retractor. The question of the pathology of the middle lobe was still moot. Physiologically this is probably absent, but pathologically it is present in most cases and usually springs from the commissure. In giving his technic, he agreed with Syms and previous speakers that it should be as simple as possible; no bladder washing, and as little dissection of the perineum as possible. He utilizes a low, old-fashioned lithotomy staff that has an extensive curve quite different from the modern, straight instrument. The position of the patient is of the utmost importance, the knees being flexed so as to reach into the armpits. Sixty-seven years was the average age of his patients, and in 78 operations he has had but two deaths.

Is It Wise to Try to Make Any One Operative Method Apply to All Prostatectomies?—Dr. Eugene Fuller, of New York, discussed the subject as it was presented to him from the results of 300 operations for removal of the prostate. He cited the indications for and against the suprapubic and the perineal operation.

Dr. Martin B. Tinker, of Ithaca, spoke of the great importance of using massive infiltration anesthesia for these cases. He uses eucaine with adrenalin, one to one hundred thousand. The entire perineum is supplied by the pudic and long pudendal nerve. These course around the inner aspect of the tuberosity of the ischium and in any subject, but particularly in the rather emaciated cases which usually come to operation, one can strike the nerves and infiltrate them without the least trouble. On account of the fact that the morality of the operation is largely caused by general anesthesia and partly too because of the objection which most patients entertain to this, it is very desirable that local anesthesia be employed.

Dr. Syms, in closing, said that the highest tribute which could be possibly paid to the perineal method, was to be found in a simple addition of the cases presented at the meeting and an estimation of their mortality. One hundred and sixty-three cases had been cited and of these four had died, the percentage being thus reduced to the nominal sum of $4^{4}/_{10}$.

Kidney Stone, Diagnosis and Treatment.—Dr. Arthur D. Bevan, of Chicago, mentioned briefly the more important etiological factors and gave statistics as to frequency, sex, age and geographical locality. He regards a mild bacillus coli infection of the kidney as probably the most common cause of stone. The typical picture as presented in text books is rarely followed He cited the conditions from which renal stone has to be differentiated and concluded by emphasizing the importance of the X-ray. Cryoscopic examination of the blood has in his hands proved most valuable in determining the condition of the renal epithelium. The treatment he divided into three groups. First, expectant. This might be employed where symptoms were not severe and should in his opinion be combined with the giving of glycerin internally and the introduction into the ureters of vaselin oil. Calculus anuria of course necessitates immediate operation, and as it is inconceivable that stones should lodge simultaneously in each ureter, it proves that one ureter is not infrequently occluded without giving rise to more than passing

symptoms. There is but a three per cent. mortality in non-suppurating cases. He would not advise the stripping of the capsule. He gave the technic of his method of operation, stating that he used a sweeping incision similar to that advised by König. The kidney should be brought upon the surface before incising it. After that is done, there is no need of considering any lives of diminished vascularity, because the hemorrhage can always be easily controlled. In stone of the pelvis, he advises a free incision of this organ. In conclusion, he wished to emphasize the importance of the X-ray in diagnosis and that early incision and removal should be practised and, in the absence of suppuration or of obstruction of the ureter, should be followed by no drainage.

Dr. C. L. Leonard, of New York, read a statistical review illustrative of the value of the X-ray as a means of diagnosing renal stone.

Dr. Joseph A. Blake spoke of the great value of Dr. Bevan's paper and expressed his wish that it might be more generally known that with suitable apparatus admirable X-ray pictures could be made of these stones in from six to eight seconds. He discussed the frequency with which unilateral calculi of the ureter often remain latent. This, he said, was an additional cause for utilizing the X-ray, because such calculi are extremely dangerous. He then discussed the question of primary or secondary nephrectomy and stated that his experience had led him to the conclusion that the kidney had better be removed at the first operation. He endorsed Dr. Bevan's attitude that in the absence of compromising conditions the wound after nephrotomy should be closed without drainage.

FOURTH DAY—JUNE 10TH.

Dr. A. J. McCosh, of New York, was elected Chairman of the section; Dr. F. W. McRae, of Atlanta, Ga., secretary.

Treatment of Fractures of the Patella by Lateral Suture.—Dr. Joseph A. Blake, of New York, detailed the anatomy and pathology of the involved parts in considerable detail. He drew particular attention to the so-called lateral patella ligaments which are instrumental in fastening the vastus internus and externus directly to the tibia. In fractures by direct violence alone they are not torn, and suffice to keep the fragments in apposition. He said that a knowledge of this anatomical fact is necessary for the establishment of a rational mode of treatment. The indications for operation are determined exclusively by the degree of tearing off the lateral ligaments. These are apt to remain intact in fractures caused by direct violence, whereas they are almost invariably torn when injury results from muscular violence. The latter cases are better treated by operation while the former yield good results by mechanical treatment only. In discussing the technic, he said that there were two points which he wished to emphasize. The first was a general one and was not original with him, although enough attention had not been given to it. It was simply to the effect that a suture of the lateral ligaments alone was quite sufficient. The second, a point which he believed had not been commented on before, the necessity of placing the stitches as close to the bone fragments as possible. This is absolutely essential in securing their coaptation so necessary to bony union. He advised a transverse incision and stated that he always made use of silkworm-gut sutures without drainage. The simplicity, ease and rapidity of this method are self-evident. An important factor not to be overlooked consists in the ability of the operator using it to avoid traumatism of the tissues such as is of necessity inflicted in any bone drilling operation. He advised massage and kindred treatments, fifteen to twenty days after operation, and believed that the time of election for operation was from the forty-eighth hour to the fifth day.

Twenty-two Consecutive Successes.—This had been the record since the adoption of this technic. Two patients had refractured their patellæ, both of whom were reoperated. There was at the second operation no evidence of a fibrous union, and great force had evidently been exerted in causing the fractures.

Dr. Gibbon, of Philadelphia, said that he could simply endorse Dr. Blake's paper, but he wished to add that age up to sixty was not a contraindication, but that alcoholism distinctly was.

Dr. Vaughn, of the Marine Hospital Service, said that although he had been able to obtain free access to the joint by a long longitudinal incision, the transverse section recommended by Blake undoubtedly gave more room. He had recently been using silver wire.

Dr. Binney, of Kansas City, said that the bugbear of bony union in these cases being essential, was at length destroyed. The real meat in the cocoanut lay in deciding first upon early operation, and second upon a thorough suturing of the lateral ligament. They do the work.

Dr. Rodman, of Philadelphia, said that Blake's observations were based on thorough anatomical and surgical principles. He was surprised that the operation which had originated in Great Britain was not so popular there as here. He affirmed that no surgeon should operate on the knee-joint without realizing and confessing to his patients that there was in its execution an element of danger both to limb and to life.

Dr. Eisendrath, of Chicago, said that some sixteen months ago he had hit upon Blake's operation through having to suture the soft parts in default of his bone drill. His technic was identical with Blake's with the single exception that he favored the insertion of two periosteal stitches where this membrane crossed the anterior surface of the patella to prevent its falling into the fracture.

Dr. Bullard said that the nomenclature of the subject should be changed from fractured patella to ruptured ligament. He asked why Dr. Blake operated so early when many other surgeons advised waiting ten or twelve days.

Dr. Charles A. Powers, of Denver, said that eight or nine years ago he had been appointed to report on the matter of operation for fractured patellæ. He had approached the subject as a skeptic, but had soon become converted. He agreed in all details with Dr. Blake.

Dr. Blake, in closing, said that long chromicized gut was worse than silver wire. In answer to Dr. Bullard, he stated that he had formerly waited for a week or ten days, but had come to the conclusion that a good deal of effort at repair had by that time been made. This necessitated the cutting of more tissue than in the case of an earlier operation.

Surgical Treatment in Certain Cases of Arthritis Deformans.—Dr. Martin B. Tinker, of Ithaca, said that before any useful surgical treatment could be devised, careful study must be made of the etiology and pathology of the condition. Of the former we know but little. Many writers have confused it with rheumatism, but there is no question that it is an entity separate and apart from this. Others have ascribed to it a nervous origin. While nervous strain and general bodily fatigue may be factors, still it does not seem possible to believe that they are the only agents. Infection by a specific organism appeals more earnestly to the thoughtful observer. And all surgical treatment should probably be based on the supposition that infec-

tion is responsible for the disease. The pathology is equally important. As is well known, it attacks the larger joints, but may after a period of twenty years or more have invaded almost every joint in the body. Primarily the disease is entirely extra-articular, but sooner or later changes, which give rise to the well-known mushroom deformity, take place in the ends of the bone. In diagnosing the condition, it should be remembered that it occasionally is present in but one large joint and may therefore not unreadily be mistaken for tuberculosis.

Value of Tuberculin.—He had injected 400 patients with tuberculin. Many of these had had arthritis deformans and in not a single instance had he obtained any reaction. As regards the extent of disability, he said there were at the institution at which he was attending surgeon no less than one dozen men and women who had been rendered so utterly helpless as to be unable to rise from their chairs or to be manipulated in any way.

Surgical Treatment.—While the various springs are able to give palliative treatment and this for the time stays the course of the disease, there is no doubt that a certain proportion of them progress until they are justly within the realm of surgical help. The simpler operation of arthrotomy should be practised to the absolute exclusion of brisement forcé, because by the pathology, it is known that there are no adhesions to break up, but that the joint is locked by small osteophytes.

Six per cent. of a series of 200 cases which he had recently seen in consultation were deemed fit subjects for operation, and in them arthrotomy, or in one or two cases arthrectomy, had given almost brilliant results. He believed the latter operation to be indicative in the presence of absolute fixation or for the relief of extreme pain.

Dr. Vaughn agreed with Dr. Tinker that probably arthritis deformans is of infectious origin. He said that the fever, which could always be recognized, if the cases were carefully watched, at their very beginning, suggested this. He had operated on the same woman three times by brisement and had succeeded in getting a very good result.

Dr. Sherman said that the value of the removal of osteophytes and exostoses had in the past been entirely unappreciated. He asked whether any evil consequences might be feared as the result of opening a diseased joint?

Dr. Tinker replied that in the quiescent cases upon which he had operated, he had experienced no more difficulty than is to be looked forward to in a normal joint. He described his method of immobilizing the shoulder at right angles to the trunk and the restitution of function by gradual and continued passive motion.

Impacted Fractures of the Neck of the Femur.—Dr. Lemoyne Wills, of Los Angeles, presented the radiographs of two interesting cases, the histories of which he gave in detail. These radiographs demonstrated very clearly the necessities for radical surgical interference if cure was to be effected.

Fat Embolism of Lung Following Fractures.—Dr. F. G. Connell, of Leadville, Col., stated that this important subject had been thoroughly thrashed out on the continent, but had for some inexplicable reason been treated with neglect both here and in Great Britain. He said that the discovery of fat globules in the sputum or urine of a suspected case would establish the diagnosis. The prognosis is grave. Fat emboli after passing through the lungs may be arrested in other organs, notably the brain and the kidney. This accident is most common after a fracture of the long bone.

SECTION OF OBSTETRICS AND DISEASES OF WOMEN.

THIRD DAY—JUNE 9TH.

(Continued from Page 1150.)

The Surgical Treatment of Bilocular Uterus and Bifid Vagina.—Dr. H. W. Longyear, of Detroit, stated that as this malformation was easy of correction it should, in his opinion, be operated upon as early as discovered, so as to avoid the accidents of pregnancy which are liable to complicate this anomaly of development. It was essential, however, that care be exercised in making a differential diagnosis between uterus duplex and uterus bicornis, for the only cases suitable for the author's operation were those in which a single uterus was divided by a medium septum extending to the fundus. The treatment consisted in grasping the septum between clamps, cutting along the latter with scissors, and then applying the Pacquelin cautery to the cut edges. The resulting cavity is then packed with gauze. Two cases were reported in which this procedure had been applied with success. One of these presented in addition an anomalous development of the left side of the body. In both there was also marked dysmenorrhea, which was apparently relieved by the operation, although in one it returned later on and necessitated oophorectomy.

Dr. Dunning, of Indianapolis, said that he had seen two cases of this kind, in which the septum was torn through during labor without any marked bleeding or other bad results. Both of his cases had done well and he doubted whether operative interference was necessary.

Dr. J. T. Johnson, of Washington, D. C., reported a case where a miscarriage for which curettage had been done, was followed by the birth of another fetus five months later. It was then determined that there was present a divided uterus, and if an operation had been done in this instance, the unpleasant consequences would have been avoided.

Dr. J. H. Carstens, of Detroit, also reported two patients. One of these had had several miscarriages, but after the septum was removed had a full term pregnancy. He advised the application of carbolic acid to the interior of the uterus after operation in order to prevent subsequent adhesions.

A Plea for More Thorough Examination of Doubtful Specimens of Ectopic Pregnancy.—Dr. J. W. Bovée, of Washington, D. C., claimed that, as many cases of ovarian and tubal hemorrhage had a symptomatology similar to that of disturbed tubal or tubo-ovarian pregnancy, particularly tubal abortion, the specimens removed from such cases were not carefully examined but were merely considered pregnancies. He suggested that for the sake of reliable statistics, if for nothing more, careful histological examinations should be made. He reported ten cases where the clinical history indicated a tubal pregnancy, but which on microscopical examination were found to be various other conditions, two of them in fact were malignant ovarian tumors.

Some Cases of Ectopic Gestation with Atypical Symptoms.—Dr. W. B. Dorsett, of St. Louis, found that occasional cases came under the observation of the surgeon that did not present the usual symptoms. Among others, right sided tubal pregnancies were sometimes mistaken for appendicular inflammations. Knowledge of the symptomatology was by no means complete. In some of the cases which he had operated, no diagnosis had been made, although indications were present which called for surgical interference. The history of the case should be subordinated to the general condition of the patient.

Dr. Carstens stated that he had operated on a case which he thought might be appendicitis. There was no temperature rise nor increase in the pulse rate. It turned out to be a right-sided ectopic. He believed that we should operate first and decide the pathological condition afterward.

Dr. Massey, of Philadelphia, entered a plea for more conservative measures in treating this condition, especially in those cases where the mass was already being absorbed by natural means. Where the diagnosis could be made of a tubal gestation, it was feasible to kill the fetus by the application of the electric current.

Dr. Goldspohn, of Chicago, considered that the only difficulty in diagnosis was in the cases seen before rupture had taken place. He also called attention to the fact that evidences of gestation were sometimes only found after a microscopical examination of the small cavity present in the interior of the blood clot. He did not believe that the peritoneum had any digestive function in doing away with the mass.

Dr. Dudley, of New York, believed that it was not necessary to remove the entire tube unless septic conditions were present. The fetus could be evacuated and the adnexa dropped back into the pelvis, after occlusions or other deformities had been corrected.

Others who participated in the discussion were Drs. Lawrence, Humiston, Stone, Brickner. The latter described the method in vogue at the Mount Sinai Hospital, in New York, in which a most careful menstrual history graphically worked out on a special chart, generally aided in making a diagnosis.

The Influence of Ovarian Implantation on Menstruation in Women.—Dr. A. P. Dudley, of New York, reported on seven cases in which he had done such conservative operations, all of which subsequently menstruated and were free from the physical changes or nervous manifestations attendant upon the production of the menopause. The last case he reported in detail. In this patient both tubes and one ovary had been previously removed. For the relief of her condition, hysterectomy was advised, but consent to do same was refused. It was then determined to free the cystic left ovary and implant it in the uterus. This was accordingly done, the organ being placed in a cavity prepared for it in the split horn of the uterus. Three months after the operation, the woman menstruated, and continued to do so at intervals of about three months. Eighteen months later a severe metrorrhagia began, for the relief of which it was finally necessary to do a total hysterectomy. The hemorrhage the writer was unable to account for. Examination of the uterus, which was presented at the meeting, showed that the uterine and ovarian tissue had become merged, with Graafian follicles well marked. In this as in the other cases, primary union had resulted between the uterus and the ovarian graft. Although he doubted the extended possibilities of the method, he thought that there was a field for its application and submitted the following questions for discussion: (1) Was the plan justifiable as a surgical procedure? (2) Was it worth the effort from a physiological standpoint? (3) Would the implanted ovary eventually resemble the fibroid in its action? (4) Was it possible that pregnancy might ultimately take place? (5) Providing it did, what was the prospect for normal delivery?

A Plea for Conservative Operations on the Ovaries, from a Neurotic Standpoint.—Dr. J. W. Cokenower, of Des Moines, Iowa, called attention to the necessity of making a better diagnosis in those cases which are referred to the gynecologist for a complex of symptoms, the cause of which is ascribed to ovarion lesions. It should be most carefully determined whether such symptoms were really due to the ovary. Intestinal intoxications could produce abnormal conditions of which pelvic disease might be the result rather than the cause. Neurotic cases were uncommon in which the condition was wholly dependent on diseased sexual organs. Negative results for ovarian operations undertaken for the relief of such troubles were quite common, and in making a decision it was best to hold an intermediate position. The time for concluding medical and beginning surgical treatment should be governed by the consensus of opinion of many observers, rather than the statistical reports of a few. He reported four cases to illlustrate his position, in which operation was followed by disappointing results.

Dr. Morris, of New York, told of his experiments with homoplastic and heteroplastic transplantations of the ovary in rabbits. Only the former was followed by successful results. He thought it well to save the ovary in pyosalpinx, and found that while the remainder of the operation was being carried out, the ovary could be kept in hot saline solution for a considerable length of time. In reference to Dr. Cokenower's paper, he thought also that it was most essential to differentiate carefully between fundamental psychoses and pure neuroses.

Dr. Goldspohn, of Chicago, said in discussing the second paper, that the problem of what to do in these cases could only be solved by making a better diagnosis between psychical and actual pain. In all patients it was well to examine all other parts of the body before the pelvis.

Dr. Humiston, of Cleveland, said that frequently the pelvic organs were normal, while others were at fault and probably accounted for the neurosis. Personally he only got good results from the radical ovarian operations.

Dr. Bacon, of Chicago, thought that the site of implantation was unfavorable, as the ovary might be washed away by the uterine discharges. It seemed to him that the chief object was to secure the benefits of the internal ovarian secretion rather the possibilities of pregnancy.

Dr. Massey, of Philadelphia, claimed that it was only necessary to remove the inflammation rather than the organ itself, and believed that this could be done most readily by kataphoresis with the mercuric ions.

Dr. Carstens, of Detroit, thought that the method might be of value in occasional cases in young women, but in older women it was necessary to extirpate the entire organ if the symptoms were bad.

Dr. Craig, of Boston, referred to the observation made by him that the normal ovary becomes scarred during middle life from the cicatrization of the continuously rupturing Graafian follicles. Many so-called cystic ovaries without clinical symptoms, are merely made up of such scarified ovaries with enlarged Graafian follicles. He considered that as it was necessary to keep up the internal ovarian secretion, Dudley's operation should prove of value.

Dr. Chandler, of Philadelphia, thought that the principal advantage to be gained from the operation lay in the fact that the menopause would be postponed. The objections were possible sepsis, death of the ovary, malignancy, and the action on the fetus.

A Series of Mistaken Gynecological Diagnoses.—Dr. T. S. Cullen, of Baltimore, presented five patients, in the first of which there were the classical signs of large multilocular ovarion cyst, but which on operation was found to be a pedunculated uterine fibroid, partially parasitic. The omentum was greatly atrophied. The association of this condition with ascites was referred to as very rare and unusual. In the second patient a diag-

nosis of globular uterus was made with two subperitoneal nodules. On section this was found to be an advanced adenocarcinoma of the corpus, although from the history it was not thought necessary to make a microscopical examination of the uterine scrapings. In the third patient there projected from the right side of the uterus a globular mass and from the vicinity of the right cornu a subperitoneal nodule. An intraligamentary and subperitoneal myomata were diagnosed. At operation the nodule proved to be a tense and kinked hydrosalpinx, and the intraligamentary growth an adenocarcinoma of the ovary, invading the bladder wall and the intestine. The fourth patient was a woman of sixty years, who had recently had temperatures from 100° to 103° F. There was marked pain in the pelvis and some discomfort during defecation. In the vaginal vault and apparently attached to the posterior surface of the uterus was a slightly irregular but globular mass. The diagnosis was either subperitoneal myomata with adhesions fixing it to the pelvic floor or a pelvic abscess. Operation disclosed an irregular globular tumor involving the sigmoid flexure. This had dropped over to the right side and become adherent to the pelvic floor. Between the growth and the floor of the pelvis was a small abscess due to rupture of a diverticulum from the intestine, of which there were a number filled with fecal concretions. In the fifth patient there had been present an adenocarcinoma of the kidney which had remained without recurrence for sixteen months after operation. Then a rapidly growing tumor of the liver was observed which involved the entire lower half. As determined later on, however, it was shown not to be a metastatic growth.

Injury to the Rectum in the Gynecologic Examinations.—Dr. H. A. Kelly, of Baltimore, in calling attention to the importance of the rectum as an avenue of investigation, referred to the dangers attending an examination roughly conducted. It was possible not only to rupture cystic structures and to spread their contents all over the abdomen, but also to injure the rectum itself. He saw four cases where the examining finger had been pushed through the rectum, and in one instance had entered a large ovarian cyst. It was not always the examiner's fault, and some of the blame might be placed on the soft condition of the tissues. In making rectal examinations it was always well to recognize but not invaginate the ampullæ, and to get the finger well beyond what he described as the third sphincter. The arm should always be relaxed and the wrist loosely held. The bowel when distended with air facilitated the examination and if the patient were in the dorsal position, the air escaped much more slowly than in the Syms position. Repair may be done through the posterior cul-de-sac, or by abdominal section.

Drs. Cullen, Lawrence, Shoemaker, Wetherill, and Noble all reported instances of rectal injury sustained in this manner.

Some Further Observations on the Use of the Stem Pessary for Scanty and Painful Menstruation.—Dr. J. H. Carstens, of Detroit, said that he had relieved many cases by this method. There were two classes of patients, young girls who had always been troubled by their menstrual flow and who had been subjected to continuous overstudy, and others, where the dysmenorrhea came on later, after a normal menstruation had been present for some years. These were unmarried women in whom the uterus and particularly the cervix were undergoing premature atrophy. The condition he claimed was due to the lack of development of the uterine muscle, and the only way to develop it was by exercise. This he believed could be secured by the introduction of a foreign body which the organ constantly endeavors to expel. The stem pessary was the most suitable means. He reported several cases. In one the stem had been in place for two years with relief of symptoms, but on removal the condition gradually returned and the stem had to be reintroduced. One case would not tolerate the stem and promptly expelled it. One case of sterility of five years had now become pregnant after the use of the stem for a few months.

The Propriety, Indications and Methods for the Termination of Pregnancy.—Dr. F. A. Higgins, of Boston, presented this paper in which he stated that there were evidences of broadening in the indications for the termination of pregnancy. The wisdom of this could not be questioned and the only after thought would be the possibility that it might lead to ill advised abortion. This he doubted. He then discussed the various acute and chronic diseases which might determine abortion. Acute diseases are not usually an indication unless labor intervenes; if so, the latter should be expedited. In treating of the various methods he thought that if bougies were used, the employment of two was better than one. He recommended the Voorhees bag and the colpeurynter however. Manual dilatation might cause rupture, while instruments were safer and under control. The dilatation depended upon the amount of stretching which the cervix would endure. The author's new form of dilator was presented and compared with the Bossi instrument, an example of which was also at hand.

Dr. Hall, of Kansas City, thought it was more honorable to suggest methods of preventing pregnancy in doubtful cases rather than to devise methods of abortion. The effect of such a paper might be bad on the public mind. But where indicated, he believed the use of a suitable instrument preferable to the finger.

Dr. Bacon, of Chicago, believed that the social condition of the patient had much to do in deciding the question. In twins and hydramnion, rupture of the membranes was indicated and he preferred that the dilating bag should be within the egg sac. Vaginal Cæsarean section was to be preferred to the use of instrumental dilatation.

Adherent Uterus as a Complication of Labor.—Dr. J. C. Applegate, of Philadelphia, based his paper on the question as to what circumstances should permit the pregnant woman with an adherent uterus to go to term. In his experiences with the various methods of operating he found that the round ligament methods had no effect on the pregnancy, but that labor destroyed the results of previous operation. The Montgomery seemed to be the most suitable. Peritoneal suspension was dangerous from the possibility of rupture of the uterus. Ventral fixation was unjustifiable before the menopause except in rare circumstances, and pregnancy to full term depends entirely on the mobility of the uterus. If the cervix did not enlarge and rise posteriorly, labor should be induced. Cæsarean section is the safest procedure in these cases. The most favorable method in his experience had been hysteropexy, with the sutures introduced in front of the origin of the tubes instead of to the fundus.

Drs. Craig, Shoemaker, Dunning, Dorsett, and Fry discussed this paper and reported cases of labor after operation.

Membranous Endometritis.—Dr. F. F. Lawrence, of Columbus, called attention to the unsatisfactory result obtained with local treatment in this condition. In a series of 42 cases examined by him, he noted that tubal or ovarious disease was present in a large proportion of cases, a considerable number of which had followed

the exanthemata. He believed that the disease was due to a secondary trophic change dependent upon an intercurrent pelvic disease. Where the condition of the ovaries and tubes was not due to an immediate infection, he believed that the endometritis could be cured by excision of the diseased structures without treating the uterus itself. He presented several successful cases and recommended that in all cases of membranous endometritis, a careful pelvic examination be made and that the method suggested be given a further trial.

Dr. Fischer, of Philadelphia, expressed surprise at the large number of cases seen by the author, but considered that those cases in which shreds only were passed should not be included in the classification. Drs. Dunning and Bonifield had also seen but very few cases of this condition.

Officers of the Section for the year 1904-1905.—Chairman, Dr. C. L. Bonifield, of Cincinnati; Vice-Chairman, Dr. F. F. Lawrence, of Columbus, Ohio; Secretary, Dr. W. P. Manton, of Detroit, Mich.; Delegate, Dr. J. W. Bovée, of Washington.

SECTION ON PEDIATRICS.

SECOND DAY—JUNE 8TH.

(Continued from Page 1150.)

How to Produce the Best Milk for Artificial Infant Feeding.—In this paper Dr. Edward F. Brush, of Mount Vernon, N. Y., called attention to the importance of cleanliness in both the surroundings and in the food provided for the cow which is to produce milk for infant feeding, and emphasized the fact that mental and physical conditions greatly affect the quality of the milk produced, and said that the mixed milk of a herd is greatly superior to milk from one cow which, he said, is always dangerous, that thoroughbreds and large producing varieties generally are usually the most liable to be affected with tuberculosis. Many cows, he said, might be safe enough for the production of butter and cheese, but at the same time might not be good producers of milk for the infant. Dr. Brush related personal experiences showing that a single cow may at times be apparently well and yet may cause the death of infants fed upon her milk. He did not believe in modifying milk other than by the addition of sterile water and, if necessary, cream. Milk, he said, should be reduced in temperature, soon after milking, to 50° F., and kept there till used, but of greatest importance was the gentle treatment of all cows, for experience had taught him that an irritated cow will produce milk which will cause illness in the baby fed upon it.

The Initial Contamination of Dairy Milk.—In discussing this subject Dr. Richard Cole Newton, of Montclair, N. J., said that one of the most encouraging signs of the times is the interest and knowledge among the laity concerning all matters pertaining to hygienic living and particularly of dairy methods. It is popularly believed that milk is aseptic while in the cow's udder, but this had been disproved by Kahn, who after most careful and elaborate attention to asepsis and antisepsis had found that cow's milk in the udder contained 242 bacteria to the cubic centimeter. Cow's milk, he said, is most frequently contaminated with dung which dissolves in the milk but carries enormous numbers of bacteria with it into the milk and that experimentation had shown that one-third of a grain carried with it seven million bacteria. Pure milk, he said, should be odorless and should have so slight a taste that most people would pronounce it tasteless and that the microscope would not detect all the contamination of milk nor would the Pasteur filter remove it. Many methods had been tried in the effort to remove the initial contamination, with greater or less success and he described various milk pails which had been devised to prevent the contamination which occurs at the time of milking, at which time the greatest amount of dirt enters the milk and that the bacteria which enter the milk afterward multiply more rapidly than those which are present before withdrawal from the udder and, therefore, if these secondary bacteria are kept out the milk will keep in good condition longer than otherwise. The method recommended for prevention of initial contamination was to cover the milk pail with sterilized cheese cloth and to draw the milk directly from the udder through this into the pail which had, of course, been previously boiled, then bottled and reduced at once to a temperature below 50° F. Such milk should not contain over 5,500 germs per cubic centimeter. This method was available to any farmer, and he should be encouraged to adopt it.

Dr. J. P. C. Griffith, of Philadelphia, said that simplicity in the care of milk is of paramount importance; that Pasteurization and sterilization are useful but only when other means of obtaining good milk were not possible. He said that the added cost of milk properly obtained was an objection, but that it was worth the added cost. The Philadelphia Pediatric Society, he said, granted certificates to dairies which kept the number of bacteria per cubic centimeter below ten thousand.

Dr. F. L. Smith, of Bridgeport, Conn., said that milk is very frequently rendered poor by improper food being given to the cows and that the Jersey cow is most susceptible to poor food. He mentioned as an example of this a case in which a herd of Jerseys had fed upon partially decayed apples, after which five of them had become drunk, and said that surely milk from such a herd was not proper food for infants. It was a well-known fact, he said, that milk frequently tasted of the food which had been eaten by the cow and that the farmer should be educated along the lines suggested by this idea.

Dr. L. C. Ager, of Brooklyn, said that every time milk is handled it is endangered and that in recognition of this the Brooklyn authorities had recently instituted a change whereby all milk is bottled at the farm and not at the creamery, and that this had resulted in the sale of better milk. Difficulty, he said, had been found in compelling the dealers to conform to the requirements of the Brooklyn authorities as they had been found placing certification labels on poor grades of milk.

Dr. Southworth, of New York, said that he did not agree with Dr. Brush in that he preferred milk sugar to cane sugar when it became necessary to add sugar to milk. He said also that the time has passed when we thought we could make cow's milk equivalent to mother's milk and that the importance of the situation would be more nearly realized if we should call the child's condition a pathological one when it is removed from the mother's breast. He said that he believed in Pasteurization and sterilization when we have milk that has not been properly secured or is somewhat old, although he recognized the disadvantages of milk so treated.

Dr. Morse, of Baltimore, said that efforts to render milk free from initial contamination were important, but that proper modification of milk should not be neglected and said that he, too, preferred milk sugar to cane sugar for addition to milk in its modification. He asked Dr. Brush what should be the cost of good milk.

Dr. Hamill, of Philadelphia, said that investigation

of the actual cost of producing good milk in Philadelphia had shown that seven and three-quarters cents per quart was the minimum cost per quart. He said that a milk pail similar to the one advocated by Dr. Newton was in use at the dairies near Philadelphia.

Dr. Gilbert, of Louisville, said that he had had very good results from sending sick children and infants to places where they could get milk while it was still warm with the animal heat of the cow.

Dr. Brush, in closing, said that he wished to emphasize the importance of obtaining milk from cows which had been gently treated. This, he said, was of even more importance than the exclusion of contaminating materials. He said that he preferred cane sugar in treating milk because experimentation had proved to him that milk sugar is practically inert, and because the commercial milk sugar is not pure. The cost of producing milk, he said, was about six or seven cents per quart and that the best milk is worth on the market from fifteen to twenty cents per quart. He further said that raw milk had always proved preferable to modified milk in his experience and cited cases to support this statement.

Dr. Newton said that, contrary to popular belief, milk which has undergone lactic acid fermentation was not necessarily bad and that "sweet" milk was not always good. The lactic acid bacteria tend to inhibit the action of other bacteria and may therefore be beneficial. In regard to sterilization, he said that when he had fed mice on sterilized milk exclusively they had died at the end of twenty-five days. He endorsed Dr. Brush's advocation of the gentle treatment of cows as productive of a better quality of milk.

Chronic Constipation in Infants.—Dr. J. Ross Snyder, of Birmingham, Ala., defined constipation as "any condition in which products of food are retained in the bowel after they have lost all nutritive power" and then went carefully over the conditions which tend to produce this result in the infant. The abdomen of the infant is such that it conduces to the accumulation of waste products in the bowel, since the lumen of the intestine is proportionately smaller than that of the adult and also longer, while the pelvis is smaller. This, he said, causes a distention of the abdominal wall and unless food such as the infantile digestive organs can care for is given to the child constipation follows; that some have thought that constipation in the mother produces an inherited tendency to constipation in the child, but this he said is not true; that although the child of a constipated mother might be more liable to constipation it was due to altered milk secretion due to improper food taken by the mother and later in the child's life to the subjection of the child to the same improper alimentation and lack of proper conditions from which the mother suffered. Tight diapers and other causes of pressure upon the abdomen are factors also in the production of constipation as are irregular and overfeeding, lack of bulk or the proper amount of fats, but the most constant cause is improper diet and in treating the condition this should always be borne in mind. The alleviation of constipation by drugs, while necessary, should not be the object of treatment as the cause should be eradicated and this could almost always be done by attention to the child's diet. Suppositories, injections and similar measures are to be discountenanced and massage of the abdomen should never be used in the treatment of constipation of infants.

Dr. I. A. Abt, of Chicago, said that the prevalent idea of fats in the production of constipation is erroneous and that occasionally there exists a tonic spasm of the sphincter and muscle which may be overcome by the introduction of a clinical thermometer into the anus.

Refractive Errors in Children.—Dr. J. H. Claiborne, of New York, reviewed the forms of these conditions which produce eye-strain, noting four general conditions, the ametropic eye, the hypermetropic eye, the myopic eye and the astigmatic eye. He condemned the custom of putting too much work upon the growing child and particularly in the condition in which the association of the extrinsic eye-muscles with the faulty refractive condition in the attainment of single binocular vision is productive of symptoms of eye-strain. The evidences of eye-strain, he said, are headache, frontal or occipital, irritability, nervousness, lack of concentration, etc., and that so clearly does the child show the signs of eye-strain in its face that an experienced ophthalmologist can almost always diagnose the form of refractive error by the expression on the face of the patient. In reviewing the conditions considered at various times as the result of eye-strain, he said of migraine that it could always be modified by correction of refractive errors and many times it might be prevented, of epilepsy and insanity he said that he did not believe it could ever be cured in this way nor could paresis or paralysis be influenced. Hysterical manifestations may be modified but only by distracting the attention of the individual from the point of numbness or other abnormal condition which may be present. He did not believe that the chorea of Sydenham was ever cured by glasses, but many cases diagnosed chorea are merely cases of eye-strain in which the efforts of the patient to secure single binocular vision are productive of facial contortions which resembled the twitchings of chorea. These, of course, could be influenced by the proper treatment of ocular errors. A frequent cause of nausea and other digestive disturbances, he said, is eye-strain, and any child that has these disorders or is not up to the average in its work in school or elsewhere should be examined for refractive errors. In conclusion Dr. Claiborne said that (1) nervous symptoms of a variety of kinds occur as the result of eye-strain. (2) Eye-strain is due to refractive errors, to imbalance of the external ocular muscular system, or more frequently to a combination of the two. (3) Of these two the refractive errors are by far the more frequent cause. (4) Muscular imbalance alone may cause it. (5) Headache is by far the most common nervous symptom caused by eye-strain. (6) The headache is chronic or induced directly by near work and is generally in the forehead and temples. (7) Migraine or hemicrania due to eye-strain is comparatively rare in children. (8) Any nervous symptom in children should arouse the suspicion of ocular defects either as a direct or contributive cause. (9) Correction should be made under atropine.

(To be Continued.)

SECTION OF MATERIA MEDICA, PHARMACY AND THERAPEUTICS.

FIRST DAY—JUNE 7TH.

Dr. O. T. Osborne, of New Haven, the Chairman, delivered an address entitled "The Scourge of Nostrums and Irregular Practitioners." He made some very pointed remarks bearing upon this subject.

Federal Supervision of Drugs.—Dr. H. W. Wiley, of Washington, D. C., spoke of the steps which the Department of Agriculture had taken in establishing a laboratory for the study of drug adulterations. By this means importation frauds can be more easily detected and a means afforded for the formulation of a uniform standard of duty. He further referred to the organization of a drug laboratory in the Bureau of Chemistry for the study of foreign drug plants with a view of in-

troducing them into this country for cultivation. The cooperation of the Post Office Department in excluding fraudulent preparations from the mail was praised. He expressed the great desirability of obtaining the cooperation of the pharmaceutists in doing away with all drugs of unknown character and strength.

SECOND DAY—JUNE 8TH.

Relation of the Internal Secretions to Epilepsy, Puerperal Eclampsia and Kindred Convulsive Disorders.—Dr. C. E. Sajous, of Philadelphia, gave a brief review of the adrenal system and its functions; the pathogenesis and pathological anatomy of the above and kindred diseases together with a study of their mutual relationship. Forms of treatment suggested by the clinical experience of the writer were outlined.

Hypnotic Drugs in Mental Disease.—Dr. Alfred R. Defendorf, of Middletown, Conn., reviewed the common hypnotics in which he pointed out their respective values in the correction of the condition which indicated their use. He showed clearly how the physiological action differed with the nature of the drug.

Chronic Arterial Hypertension.—Dr. H. W. Cook, of Richmond, Va., read a paper discussing those vascular diseases which involve hypertension. He reviewed its relations to arterial sclerosis, chronic nephritis and similar diseases. Alcohol does not produce hypertension by any action of its own, but only by chronic productive inflammation in the various vascular organs of the body, whereas toxins and toxic chemicals and drugs produce an increase in tension by constriction of the vessels themselves. He spoke of an idiopathic hypertension sometimes found, the cause of which is not apparent even on careful examination. The treatment suggested was vasodilatation. This relieves the condition of hypertension only and does not cure. The nitrites, especially amyl, and sodium nitrites seem to be the most serviceable. Nitro-glycerine is uncertain in its action. Sodium nitrite has been found to lower tension for from two to four hours. The best results follow doses of one to two grains after meals. The latter has many other advantages over nitroglycerine. The transient character of the action of the nitrites was brought up in discussion, but it was held by the author that the action of the sodium nitrite is sufficiently prolonged to furnish satisfactory results in chronic cases.

Control of Internal Hemorrhage by Drugs.—Dr. T. L. Coley, of Philadelphia, said this included all forms of hemorrhage in which the bleeding points could not be reached. An important factor set down was the need of absolute bodily mental rest in cases of internal hemorrhage. The patient's great fear of the results of the hemorrhage should be controlled to aid vasodilatation, so as to decrease blood pressure. He spoke of the danger from the dislodgment of clots, by increasing the blood pressure with the stimulants administered for shock. In reviewing the various internal hemostatics now in general use, he held there was no evidence of their value as local vasoconstrictors. Adrenalin has value only when used locally. Its internal administration is contraindicated, since it has no selective action. Digitalis and ergot also are contraindicated, the latter, especially in pulmonary hemorrhage. Opium and morphine have proved of the greatest value for all forms of bleeding by their general depressing action. Ipecac has been shown to be a specific in some forms of dysentery, but the emesis it produces does not permit its use in pulmonary hemorrhage. Strychnine is only indicated in careful doses when collapse is imminent. Alcohol has no value. Normal saline solution by enteroclysis and hypodermoclysis gives the best and quickest results. While calcium chloride is good, its prolonged use may be followed by a reverse in its action. The use of gelatin by injection is uncertain, though it should not be discontinued. There is not a single internal hemostatic that is specific. Discussion brought out the great clinical value of atropine, although it is theoretically contraindicated.

Drugs Irritant to the Kidneys.—Dr. Torald Sollman, of Cleveland, said that too little is known about this class of drugs. He showed the great need of experiments, both clinical and on animals, to determine to what extent the drugs falling under this head could be used without an increased impairment of the kidneys' excretory process. He added that a drug might be serviceable even if it irritated renal epithelium if it aided in the excretion of toxic substances.

Newer Physiology of the Gastro-intestinal Canal.—Dr. L. B. Mendel, of New Haven, Conn., reviewed recent important works on this subject. He declared there was a difference between the peristaltic action of the cardiac and pyloric portions of the stomach in the digestive process, that of the cardiac region being the more active. The pylorus is stimulated to rhythmical contraction by the presence of free acid in the stomach. He spoke of the recent idea in regard to the stimulation of the digestive glands. It is thought that the quantities of the various enzymes secreted differ according to the character of the food ingested, a larger quantity of a proteid food causing an increase in the secretion of the proteolytic enzymes and vice versa. He likened it to a physiological education of the digestive glands. Presupposing these principles, the disuse and misuse of a gland are very important. He discussed the mechanism and enervation of the elementary canal and the chemical changes therein.

Etiology and Pathology of Gout.—Dr. T. B. Futcher, of Baltimore, said heredity was a very important factor in the etiology of gout. The disease is more frequent in males than in females. Alcohol in the non-distilled beverages is a more important factor than in the distilled liquors. Large amounts of nitrogenous food associated with bad hygienic measures are predisposing factors. Lead intoxication may be a cause. Gout is common in saloon keepers and brewers. It is accompanied by an excess of uric acid, which is supposed to be due to a deficient excretion by the kidney of nitrogenous materials. The condition is probably due to the circulation of the uric acid in the blood and its subsequent deposition in that part of the peri-articular cartilages farthest from the vascular supply. The alkalinity of the blood is not decreased.

Systemic Value of Radical Changes in Diet.—Dr. R. H. Chittenden, of Yale, reviewed a series of experiments conducted at New Haven during the past winter on 26 males. They represented all sorts and conditions of men. He said that heretofore experiments had dealt with the fact that people thought man required a certain amount of nitrogenous food. The results from his experiments showed that a reduction of nitrogen was beneficial rather than deleterious. He argued that if the body could get along with less nitrogenous food, the excretory tissues would not have to do as much work and they would obtain physiological rest. Must there not be some value in the resting of these processes? There is perfect safety in a lower nitrogenous diet. Subjects of the experiments did not lose weight, blood or strength, but gained in all of these. He ascribed some benefit to a more regular mode of life and exercise but made due allowance for these factors in his conclusions. The writer believed there was a gain by the physiological economy and this would relieve the kidneys and liver. He believed in a diet which decreased uric acid or its precedents, in temperance—not in prohibition.

Third Day—June 9th.

Hydrastis, Some of Its Therapeutic Uses.—Dr. Blair Stewart, of Atlantic City, gave a brief historical sketch of the drug, and described its physiological action. He gave his experience with the drug which he found valuable in catarrhal conditions of the gastro-intestinal tract. He found the best results to follow very small doses given at frequent intervals. For colitis, he recommended one to six drops of the fluid extract in water before meals and cautioned those using it against prescribing it in cases of pregnant women.

Apocynum Cannabinum.—Dr. Horatio Wood, Jr., of Philadelphia, reviewed the uses of the drug and its literature. By careful pharmacological experimentation with the drug, he found its principal action was the following: It caused the heart to beat slower and stronger, and increased the blood pressure markedly. The heart regained its normal beat, but maintained a high vascular pressure. There is a rapid fall in the pressure following its discontinuance. He found the action to be due to a stimulation of the inhibitory center in the medulla, the cord not entering into the process. He compared and contrasted its action with digitalis, with which its action is quite similar. It has a pronounced diuretic action dependent upon the increased pressure. In seeking its active principle, he was led to believe that it is in the form of a glucoside. Unfortunately he has not as yet been able to decide the question.

The Specific Treatment for Tuberculosis.—Dr. Edward R. Baldwin, of Saranac Lake, N. Y., said his conclusions were drawn from experiments on animals and clinical observation. He said that he was led to believe that tuberculin acted by immunizing followed by a healing process. He found that it had very questionable value in the more acute conditions or in advanced stages of the disease. He did not discountenance its use, however, as a matter of resort, but said that it was of great value in clearing the sputum of bacilli and in completing the physical cure in chronic incipient cases; especially those cases which although apparently cured, resist the efforts of the physician in bringing the patient to that stage where he can be safely discharged from observation. The most rational tuberculin, he thought, was prepared as an emulsion of the bacilli sterilized by chemicals and not by heat, as the heat causes a destructive process. He believed that the treatment should be given periodically, with intervals of three months. The great care required in the administration and supervision of its use limited it to sanatoria. He considered any serumtherapy which has been produced to be of no use in the treatment of tuberculosis.

Progress in Actinotherapy.—Dr. William S. Gottheil, of New York, said that its use by reason of the expense and the character of the apparatus was limited to hospitals and sanatoria. He reviewed the various forms of ray and declared much had been done in the way of cures by the use of this form of treatment. A large part of the lack of success met with could be accounted for by the lack of strength of the light. The ordinary Finsen apparatus cannot be obtained in this country. The average machine sold in this country is entirely too weak to do much good, as only the very highest powers produce results, *i.e.* arcs of 50 to 100 amperes. He found the deeper results to vary inversely as the superficial ones.

Internal Medication and External Application in Pneumonia.—Dr. George Dock, of Ann Arbor, contrasted the value of the more common internal methods which had been in use for so long, with the more recent and simpler ideas. He called attention to the necessity of keeping the mouth as aseptic as possible and said that the usual bronchial and intestinal complications are best treated by means of internal medication, whereas, the best all round routine treatment for the heart and cerebral symptoms is the ice coil, ice bag, or ice bath. Although seemingly a method which is too radical, the rapid and positive relief following their use demand it from the physician.

Heart Failure in Pneumonia.—Dr. Solomon Solis-Cohen reviewed and classified the causes of heart failure as a complication and emphatically called attention to the point that the time to treat heart failure was before the failure appeared. The toxemia calls for free blood letting and diuresis. In the first stages of the disease, heat should be used to obtain diaphoresis, the rationale being to get rid of the toxins; while venesection is indicated in the latter stages for the same purpose, when the vascular system becomes weakened. Some of the more common causes of heart failure are febrile heat and its treatment, with antipyretics and cold, toxemia eliminating measures, and deficient oxygenation of the blood. He advocated the use of tincture of musk, drops five to ten, by mouth. The purity of the drug must be positively ascertained. He laid special stress upon the application of cold. If the ice-bag or coil is preceded for a minute or two by intense heat, the shock of applying the cold is diminished and the result is better. The time for the application of cold is ten to thirty minutes twice a day, or as the heart symptoms indicate. As poultices do relieve pain and give rest, they should be used. Absolute rest of the patient on his back in a passive condition is essential. The least movement is to be prohibited. Amyl nitrite and nitroglycerin are great aids in the congestion of the pulmonary circulation. The treatment could be summed up in the use of good judgment, conservatism and the immediate execution of indicated treatment.

Serum Treatment of Pneumonia.—Dr. J. M Anders, of Philadelphia, said it was the most rational treatment of the disease. Success has followed its use by some, failures by others. He showed the need of a more effective preparation and called attention to the necessity of a bacteriological diagnosis in pneumonia before the use of serum treatment could be carried out properly. The statistics of its use so far are of no value, as they deal with isolated cases. With those cases reported, the results have not been as good as when the patient was treated in the usual way. Summing up the ordinary treatment, its trial has been of sufficient duration to prove that it is no good, and that there is a field for a good toxin yet to be found.

Therapeutic Value of Massage in Acute Diseases.—Dr. J. W. Seaver of New Haven, Conn., reviewed the anatomy of the hemic and lymphatic circulations in both the deep and the superficial tissues, and endeavored to show the theoretical basis for the use of massage. He discussed at some length the wide field for its application and those diseases which would be most apt to respond to its use. He made a strong plea for a system of instruction in this country similar to the institutions in Sweden for the education of skilled masseurs.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Guy's Hospital Reports. Volume 68. 8vo, 386 pages. J. & A. Churchill, London.

Manual of Clinical Diagnosis. By Dr. C. E. Simon. Fifth edition. 695 pages. Illustrated. Lea Brothers & Co., New York and Philadelphia.

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ORIGINAL ARTICLES.

IODINE AND MERCURY TO COMBAT LOCAL INFECTIONS.

BY AUG. STABLER, M.D.,

OF BRIGHTON, MARYLAND.

WHEN the germ theory was in its infancy, Koch determined that mercuric iodide stood at the head of the list of the germicides then known, being capable of killing anthrax and other bacilli in the dilution of one part in 50,000 parts of water.

It is well known that the human system may be permeated by small quantities of either mercury or iodine without causing any unpleasant symptoms. When a patient has been taking potassium iodide in full medicinal doses, if calomel be dusted on the conjunctiva, a red color will be developed with coincident irritation due to the formation of mercuric iodide. Calomel being an insoluble substance the iodide of mercury is in this case developed on the surface of the mucous membrane and at first produces only a surface disinfection, but mercuric iodide being soluble in solutions containing potassium iodide, will penetrate more or less deeply and kill or inhibit some of the microbes imbedded in the tissues. If, instead of potassium iodide, the calomel be given internally in moderate doses frequently repeated, and a solution of iodine be applied locally, mercuric iodide will again be formed, but iodine being a diffusible substance and mercury being contained in the fluids of the body the penetration will be deeper and the local irritation less than when the calomel was locally applied.

This consideration led me about ten years ago to formulate and put in practice a general method of treating local infections, which has given most gratifying results in a great number and variety of clinical cases. The solution of iodine which I apply to mucous membranes is as follows: A menstruum is made of equal parts of glycerin and water. To this I add tincture iodine one dram to the ounce with a little belladonna and carbolic acid as local sedatives. This stock solution, which can be made up in a few minutes, from materials that every physician can carry, is applied through a simple hand atomizer to throat and nose, if these are the parts requiring local treatment, or it may be applied to uterus, vagina urethra or skin in any way the physician desires.

In using the atomizer I always direct the patient to hold the tube between the teeth with lips closed in the same position as in smoking a pipe and to *breathe through the nose*. The bulb is worked vigorously and the fine spray will be seen issuing from the nostrils, showing plainly that the whole interior of throat and nose is covered with the spray. If the mouth be open while spraying the spray strikes the posterior wall of the pharynx and flies back out of the mouth without reaching the postnasal space at all. Even small children readily learn to "smoke a pipe" in this way and may have their throats pleasantly and painlessly disinfected many times a day.

In February, 1899, when the snow was 2½ feet deep on a level and drifted to six feet in all the roads, I was called to a house three miles from home wherein I found a father, mother and fifteen children (negroes) living in four rooms. Five of the children had diphtheria. It was the middle house in a row of small tenements and the family was receiving frequent friendly visits from near neighbors on either side. The infection was traceable to a previous case of diphtheria about a mile away where one of the children had been staying.

Owing to the impassable roads no antitoxin could be obtained and I quickly resolved to give my method a thorough test. The calomel was commenced at once and a messenger despatched for an atomizer and a pound of formaldehyde solution. The mother was directed to spray the throats with iodine solution every two hours and each time to pour a little formaldehyde on the hot stove. Communication with the outside world was cut off as far as possible both by telling the family and warning others of the danger. The effect of treatment was very marked within the first twenty-four hours. Even the baby three months old took it well, and all progressed favorably to recovery without a single complication. Two new cases developed in the family and these also were successfully treated. There was no spread of the infection to other houses.

In several of these cases I found that when the calomel was pushed the false membrane would clean off when the iodine spray alone seemed to have little effect. Of course, now, I always use antitoxin at the earliest possible moment and take pains to keep a fresh supply on hand, but this does not kill the bacillus of Loeffler, or prevent it from being carried for weeks or months in the throat of a recovered patient. By using antitoxin, mercury and iodine simultaneously, the enemy is attacked in front, flanks and rear, and the only terms are unconditional surrender.

Rheumatism is another infection now generally believed to enter by the tonsil and the painful condition of the tonsil always gives warning of its presence. Here the mercury and iodine achieve brilliant results, and if applied early, suppuration of the tonsil, and joint and heart complications rarely occur. When called to a case of acute articular rheumatism (even if gonorrheal), it is my practice to apply an iodine

plaster to the affected joint. A piece of Z. O. adhesive plaster about six by eight inches has a thin layer of absorbent cotton or lint spread on the sticky side leaving a margin uncovered about 1½ inch wide all around. The cotton is moistened with tincture iodine, tincture belladonna and spirits of camphor, equal parts. The plaster is warmed, applied and covered with flannel. If the pain is not controlled in twenty-four hours I raise one edge of the plaster and pour in more of the solution, covering the leak with a fresh piece of plaster; not forgetting to push the mercury internally and also give a little acetanilid and salol. Morphine is very seldom needed where this treatment is begun early. Even in sciatica these measures have given me better results than any other treatment.

Subcutaneous infections, such as boils, carbuncles, phlegmons, felons, etc., are treated with the happiest results. Here I usually combine ichthyol and tincture iodine of each one part with six parts of boroglyceride. Apply on lint or absorbent cotton and cover with parchment paper and a bandage. The same treatment is very effective in erysipelas and in mammary inflammations. In local infection of the uterus occurring after abortion or parturition this method has given excellent results. Being harmless and painless the solution may be injected directly into the uterine cavity with a hard rubber syringe having a long slender nozzle. The depleting action of the glycerin is here a valuable adjunct. Where the cervix and vagina only need treatment the patient may be trusted to make the applications herself, as but a teaspoonful of the iodine, ichthyol and boroglyceride injected into the vagina and left there two or three times a day, is sufficient. I have not yet given the method sufficient trial in chronic skin diseases but believe it will have a field of usefulness in acne, eczema, tricophytosis and other intractable affections.

In writing this paper I have directly violated the advice of my revered professors, given twenty years ago: "Avoid routine practice. Treat patients, not disease." But we are surely progressing toward specific treatment for infectious maladies. An enlightened public and the physician's own conscience demand that he be an aggressive fighter, prepared and striving to *cure* disease whenever possible; frequently successful in arresting invasions that soon would be beyond control.

Spleen in Pernicious Anemia.—In a number of cases of pernicious anemia examined by O. Kurpuweit (Deutsch. Arch. f. klin. Med., Vol. 80, Nos. 1 and 2) the spleen was not enlarged. Microscopically, elements were found, which are not usually described, namely cells characteristic of the bone-marrow, such as neutrophile and eosinophile myelocytes, normo- and megaloblasts. The spleen was then examined at a number of other autopsies, with the result that eosinophiles, myelocytes and normoblasts were encountered wherever the spleen was altered through congestion, inflammatory processes and severe anemia. Since these cells normally do not belong to the spleen, it is safe to assume that the splenic tissue can easily undergo myeloid transformation.

A BRIEF REPORT OF FOUR YEARS OF GENITO-URINARY WORK IN THE SECOND SURGICAL DIVISION OF MOUNT SINAI HOSPITAL.

BY HOWARD LILIENTHAL, M.D.,
OF NEW YORK.

(Continued from Page 1166.)

Until our results are less satisfactory than they are at present suprapubic prostatectomy will be our method of choice. Although portions of the urethra have come away with the prostate in some cases, the writer believes that with care and not too great haste this may almost always be avoided.[1] The operation is rapid, comparatively bloodless, and is followed by a minimum degree of shock. It permits of a quick and accurate examination of all portions of the bladder with the removal of calculi even when they are encysted. Wounding of the rectum is very rare, and has not occurred in any of our cases. The wound heals within three or four weeks, the function of urination returning sometimes as early as the tenth day. Impotency rarely if ever follows. Believing that the technic of the operation has very much to do with its success, I will give the steps in a few words:

1. Passing of catheter and washing the bladder, leaving the viscus empty, and attaching a rubber atomizer bulb to the catheter.

2. Incision 2 or 2½ inches long, in the linea alba with retraction of the recti.

3. Inflation of the bladder by an assistant. (There being no ligature about the penis, there is no dangerous air tension so long as the catheter is not very large. Besides, the finger of the operator in the wound would at once detect dangerous pressure.)

4. Retraction of the peritoneal reflection.

5. Insertion of two retraction sutures into the vesical wall.

6. Puncture of the bladder with a narrow-bladed knife and the enlarging of this opening with the dressing forceps. (Thus far about a minute to a minute and a half may have been consumed, without any appearance of haste, provided careful preparation has been made for each step.)

7. Exploration of bladder and palpation of prostate.

8. An assistant places his finger in the rectum and pushes up the prostate which is now caught firmly with bullet forceps or vulsella.

9. A sagittal incision of the mucosa and prostatic substance with scissors.

10. Enucleation of the organ with the ungloved finger. (One need not hurry during this important step of the operation. It is better to work a little slowly than too roughly or carelessly. The entire procedure will be found to have consumed not more than say from ten to fifteen minutes.)

11. Thorough flushing of the bladder through the wound with hot saline solution.

12. Packing of the prostatic portion of the

[1] The writer does not believe that the urethra should be removed by preference, in spite of the good showing of Moynihan. Annals of Surgery, Jan., 1904.

wound through a very large endoscope or a Kelly's cystoscope inserted into the wound.

We have found the perineal drain to be unnecessary and, if anything, a detriment. Careful continuous siphonage with frequent flushing of the bladder answer every purpose. For the first thirty-six to forty-eight hours after the operation the packings are left in, the gauze upon the abdomen being changed as often as it becomes saturated. Then the packings are removed, the tube is inserted and siphonage begun.

Very old or feeble individuals, in whom the danger from pulmonary hypostasis is great, may be allowed to sit up out of bed on the third day, the siphonage being temporarily interrupted.

There is no time here to go into the matter of preparation for the operation, the proper selection of cases and many other interesting and important points.

In the matter of carcinoma of the prostate, I must say that I cannot agree with Harrison, who considers it bad surgery to curet suprapubically. On the contrary, I have given much relief in these cases and believe it to be justifiable and surgical.

Case XI.—Vesical Calculus; Prostatic Hypertrophy; Suprapubic Lithotomy; Prostatectomy; Cure.

Joseph S., aged seventy-seven years, had never had any genito-urinary disease. For years there had been frequent urination at night. There was an attack of cystitis with retention some months before admission. Since then urination consisted merely in overflow unless the catheter was employed. There had been a left epididymitis, hematuria intermittent in character, and spasm of the vesical sphincter frequent and severe. Soft rubber catheter entered with difficulty and a Mercier not at all, because of the sensitiveness of the deep urethra. The circulation was sluggish as shown by edema of the legs and ankles. There was no valvular cardiac disease, but some senile myocarditis. Urine was apparently normal so far as renal elements were concerned, but there was blood mucus, etc., from the bladder. By rectum, an enlargement of the middle lobe of the prostate the size of a large egg was noted. Calculus was suspected, but no sounding was done because an operation was contemplated in any event. He was admitted January 3, 1903, after pretty thorough preparation at home (he was a private patient).

On January 4 lithotomy and suprapubic prostatectomy without perineal drainage was done by the writer. A soft, porous stone as large as an almond was found encysted in the wall of the bladder in the trigonum. Several smaller stones were also removed. The right, left and middle lobes of the prostate were enucleated. Time, thirty minutes. The portions of the prostate removed were small fibromata, very firm in consistency. (Pathological report by Dr. Mandlebaum.) No shock followed the operation. There was some superficial sloughing of the external wound, perhaps due to the formalin liberated from the urotropin which the patient was taking. He was out of bed five days after the operation. On February 12 the tube was removed and he passed considerable urine, four ounces at a time, by the urethra. February 15 he was discharged cured.

Note.—All edema has disappeared and he can walk six miles at a time without abnormal fatigue. He has remained perfectly well and is apparently rejuvenated.

Case XII.—Hypertrophy of Prostate; Suprapubic Prostatectomy; Cure.

S. S., sixty-five years old, was admitted May 4, 1903. He had been seen by Dr. Wiener in July, 1902, during a similar illness and since then there had been repeated attacks of pain, especially during the past six months. He gave a history of the usual symptoms of prostatic hypertrophy. The prostate was moderately enlarged and tender. No instrument could be passed into the bladder because of an obstruction at the prostatic urethra. Attempts at catheterization had been followed by bleeding. On admission the prostate was found to be, when examined per rectum, moderately enlarged, especially the lateral lobes. The patient passed 3½ ounces of urine, was then catheterized and 22 ounces of residual urine were withdrawn.

On May 17 suprapubic prostatectomy under nitrous oxide gas was performed by Dr. Wiener. Time, seventeen minutes. The prostate, the size of a small lemon, came out in one mass, traversed by the urethra. Convalescence was somewhat interrupted by the formation of an abscess in the scrotum, but about June 15 the patient was passing his urine through the natural channels and was discharged cured.

Case XIII.—Hypertrophy of Prostate; Suprapubic Prostatectomy; Cure.

William N., aged eighty-two years, was admitted January 28, 1903. He had had gonorrhea several years ago, the attack lasting several months. He had had symptoms of prostatic enlargement for many years with his first complete retention about three weeks before, and since then had to be catheterized every day. A soft rubber catheter passed readily. By rectum a fairly hard, medium-sized prostate was felt. On January 28 suprapubic prostatectomy, under nitrous oxide gas and ether, was performed by Dr. Wiener. Time, fourteen minutes. The prostate was two inches in diameter, hard and fibrous, almost globular and traversed by the prostatic urethra. The packings were removed on the third, fourth and fifth days. On February 22 the tube was taken out and a small amount of urine was passed through the penis. After this, except for a slight attack of epididymitis, convalescence was normal and he was discharged on March 24, passing every drop of urine by the urethra and with no residual.

Case XIV.—Prostatic Hypertrophy; Suprapubic Prostatectomy; Cure.

Wolf C., aged fifty seven years, had suffered for about ten months with symptoms referable to

an enlarged prostate. He had had four or five urinations at night, painful and burning. He was admitted on July 3, 1903. One ounce of residual urine was found when catheterized. No. 28 sound passed into the bladder. On July 7 suprapubic prostatectomy was performed under nitrous oxide gas by Dr. Wiener and a mass about the size of a lemon was removed, being shelled out with considerable difficulty in nineteen minutes. On July 17, after good reaction, pyocyaneous infection was found in the lower part of the wound. This infection was killed by the application of ether followed by carbolic acid spray, so that, on the following day, no evidences were visible.

On August 19 the drainage tube was left out of the suprapubic wound, but urination by the natural channels was impossible.

On August 25 perineal section for postoperative stricture of the urethra was performed by Dr. Wiener. Numerous attempts having been made to enter the bladder with a great variety of sounds and catheters without success, a perineal section was made and the urethra opened. It was then found that the deepest portion of the urethra was apparently obliterated. The suprapubic wound was enlarged and retrograde sound admitted with success. Then, when the bladder was inspected with the illuminating endoscope, with the finger in the perineal wound, what appeared to be the urethral dimple could be palpated. The bladder was opened through the perineal incision. Large catheter (30 Fr.) drained through the perineum. The suprapubic and perineal wounds were dressed dry. On September 10 the patient was discharged. He was able to pass every ounce of urine voluntarily, most of the urine coming through the perineal wound but none through the suprapubic opening.

On September 17 the patient was readmitted for the treatment of a right epididymitis which soon yielded to appropriate remedies. The perineal wound had contracted to a considerable degree and it soon healed, but there was constant dribbling of urine, with no voluntary urination. At present he is able to hold six ounces of urine and is gradually regaining normal control, though he finds it necessary to wear a urinal when he goes out.

Case XV.—Prostatic Hypertrophy; Chronic Cystitis; Suprapubic Cystotomy and Prostatectomy; Cure.

M. L. M., aged seventy-five years, had suffered for about five years with the symptoms common in cases of senile hypertrophy of the prostate. He had occasional attacks of epididymitis and was obliged to use the catheter at each urination. For five days before admission on September 5, 1903, he had had daily chills. His general condition was poor although he was quite obese. Slight icterus was present. Emphysema and a slight bronchitis complicated the case still further. His heart's action was irregular and slow, the basal sounds equal and indistinguishable. The first apical sound was rough. The pulse was irregular and of poor quality. On September 15 Dr. Wiener operated under eucaine, 4 per cent., continuing with nitrous oxide gas after the bladder had been reached. The patient's condition being very miserable, the removal of the prostate was deferred for eleven days, until September 26 when it was enulceated in eight minutes with very little hemorrhage under nitrous oxide anesthesia. There were two median lobes the size of a plum. About one inch of the urethra was removed with the prostate. On October 30 he was discharged, still passing his urine through the wound.

Case XVI.—Hypertrophy of Prostate; No Operation; Death.

Charles K., seventy-five years old, was admitted October 25, 1903, in an almost moribund condition, delirious, with urinary sepsis, and two large bedsores. He was not a proper subject for any operation and died on November 4. No autopsy.

Case XVII.—Retention of Urine; Uremia; Prostatic Hypertrophy; No Operation; Death.

I. R., aged ninety-two years, was admitted May 28 almost moribund. His mental condition was such that no satisfactory history could be obtained. His present illness was said to be of two days' standing, during which time he had not been able to urinate without a catheter. Soon after admission 31 ounces of bloody urine were withdrawn with a silver catheter and the bladder was irrigated. Rectal examination showed an enlargement of both lobes of the prostate. On June 7 he died of uremia without operation. No autopsy.

Case XVIII.—Urinary Sepsis; Hypertrophy of Prostate; No Operation; Death.

H. R., seventy-nine years old, was admitted on March 1, 1903. He was mentally and physically incapacitated from giving a clear history. It was ascertained that his illness had lasted about four months, during which time he required constant catheterization. Two days before admission he began to have severe pain in the hypogastrium which became more intense the day before admission. The patient was continually groaning and in a semicomatose condition, with general abdominal pains, most intense in the hypogastrium, and

DISEASES OF THE URETHRA.

Disease.	Operation.	Total.	Died.	Total, 1903.	Died, 1903.
Stricture	Urethrotomy, Internal	4	0	0	0
Stricture	Urethrotomy, External	15	1	5	1
Tumor of	Suprapubic Extirpation	1	0	0	0
Periurethral Abscess	Incision and Drainage	3	0	3	0
Phagedenic Chancre.	Urethrotomy, and Cauterization	1	0	1	0
		24	1	9	1

with a temperature of 100° F., pulse 126 and respirations 30. The man was evidently moribund and it was not considered wise to perform an operation of any kind. He died shortly after admission. Autopsy was refused.

The cause of death in the fatal case of external urethrotomy for stricture is made clear in the following history:

Case XIX.—Surgical Kidney; Stricture of the Urethra; Cystitis; Urinary Sepsis; External Urethratomy and Death.

S. S., a German, aged sixty years, was admitted July 2, 1903. He had had gonorrhea many years before. Four years previous he had had an attack similar to the present one. About three weeks before admission there had been great frequency in urination by day as well as by night. The urine had been red in color and there was great pain during its passage. He was examined on July 4 when it was demonstrated that a No. 11 olivary bougie passed a stricture about four inches from the meatus, but it refused to pass through the entire stricture in the deep urethra. The following day there was a rise of temperature to 102.2° F.

On July 7 a rapid dilatation of the stricture in the penile portion was performed by Dr. Elsberg and an external urethrotomy for the deep stricture. At the end of the operation a 32 Fr. sound was passed into the bladder. The patient reacted well. July 15 the urethra was irrigated through a catheter and sounds up to 31 Fr. were passed. This was done in the morning. At 9 o'clock P.M. there was headache and dizziness and the bladder was found to be distended midway to the umbilicus. Attempts to pass urine voluntarily were ineffectual. A soft rubber catheter passed into the bladder through the perineal wound and 23 ounces of urine were withdrawn. It was of a foul odor, slightly blood-tinged and contained much stringy mucus. The bladder was now irrigated daily through the perineal wound with saline solution. On July 20 the patient urinated partly through the urethra and partly through the perineal wound and two days later there was a chill and a temperature rise to 103° F. From this time on there was a steadily increasing urinary sepsis with chills, rapid pulse and high temperature until August 17, when he died. The blood culture made before death demonstrated the presence of the bacterium coli. Autopsy was refused.

Case XX.—Phagedenic Chancre of Urethra; Incision and Cauterization; Cure.

S. L., thirty-seven years old, married, was admitted October 29, 1903. He had been operated upon for stricture five years before. He said he had had chancre twelve years before and had undergone treatment. There had been numerous attacks of gonorrhea. For two weeks before admission he had noticed swelling of the glans penis accompanied by a slight purulent discharge from the meatus. The discharge showed gonococci. There had been chills and fever. Constant and severe pain in glans penis. On admission it was seen that there was a considerable swelling of the mucous membrane of the urethra, the meatus pouting, an ulcerated area being visible on the roof of the urethra. The glans was glazed and exquisitely tender. A sore was also noted on the left side of the penis in the sulcus behind the glans and there was a painful and enlarged right inguinal gland. He was treated by urethral irrigations and dressings with ichthyol ointment but there was very little improvement.

On November 2, under nitrous oxide gas, the writer incised the urethra from the lower commissure of the meatus for about three-quarters of an inch backward, exposing the large intra-urethral sore. This was thoroughly cauterized with the Paquelin and dressed with iodoform gauze. A perineal urethrotomy for drainage was performed at the same time and a soft rubber catheter sutured in place, so that no urine passed through the urethra. After this there was considerable and rapid improvement and, on November 9 the perineal tube was removed. The wound in the penis seemed to be granulating. The patient passed almost all the urine through the urethra and was out of bed. On November 12, under local anesthesia, about three ounces of thick yellow pus were evacuated from the glands in the right inguinal region, a necrotic gland being, at the same time, withdrawn. The pathological report showed the presence of *Staphylococcus aureus*. About November 16 edema of the penis was practically gone and there was but a slight discharge from the abscess cavity. On November 19 the ulcer had apparently healed and the inguinal wound granulated. There had been for several days an acneform eruption of the face and limbs which was thought to be due to the iodoform. It became fairly characteristic of secondary syphilis, however, and so inunctions were begun. The patient was then discharged from the hospital but has continued under observation. He developed a very acute secondary syphilis and is still under treatment.

DISEASES OF THE PENIS.

Disease.	Operation.	Total.	Died.	Total, 1903.	Died, 1903.
Dermoid Cyst of Prepuce	Excision	1	0	0	0
Phimosis	Circumcision	1	0	0	0
Hypospadias	Meatotomy	3	0	1	0
Hypospadias	Urethroplasty	3	0	3	0
		8	0	4	0

Case XXI.—Hypospadias; Incision of Penoscrotal Bridge; Improvement.

E. D., aged twenty-two years, was admitted to the hospital April 13, 1903, for a deformity of the penis following four operations for the relief of an hypospadias. The penis was bound down to the scrotum by a bridge of tissue which had been apparently made as a first step of the final plastic

MISCELLANEOUS. NO OPERATION.

Disease.	Total.	Died.	Total, 1903.	Died, 1903.
Gonorrhea	1	0	1	0
Pyuria	1	0	1	0
Genito-Urinary Tuberculosis (with advanced pulmonary tuberculosis.)	1	0	1	0
	3	0	3	0

operation. This bridge of tissue appeared to have been sewn to a piece of glans which lay below and a considerable distance from the main portion of the glans. On April 14 operation by the writer. The penis was freed by cutting this bridge and the meatus was forcibly dilated to No. 30 Fr. There was considerable improvement and the patient was discharged on May 13, passing a fair stream, and with the organ capable of performing sexual function.

DISEASES OF SCROTUM AND TESTES.

Disease.	Operation.	Total.	Died.	Total, 1903.	Died, 1903.
Varicocele	Extirpation	17	0	3	0
Varicocele	Ligation	1	0	0	0
Tuberculosis of globus minor.	Plastic for Sterility.	1	0	0	0
Tumor of Testis	Orchidectomy	4	1	0	0
Torsion of Testis	Orchidectomy	2	0	0	0
Tuberculosis of Testis	Orchidectomy	1	0	1	0
Suppuration of Testis	Orchidectomy	1	0	1	0
Abscess of Testis	Incision and drainage	1	0	0	0
Undescended Testis	Plastic on Epididymis	4	0	1	0
Tumor of Undescended Testicle	Exploratory Celiotomy	1	1	1	1
Hydrocele	Incision and drainage (Volkmann)	9	0	0	0
Hydrocele	Incision and Eversion (Winkelmann)	2	0	0	0
Hydrocele	Excision of tunica (Bergmann)	5	0	2	0
Hydrocele of Cord	Bassini's operation for hernia	1	0	0	0
Spermatocele	Excision	1	0	1	0
Spermatocele	Incision and drainage	1	0	1	0
Gangrene of Scrotum and Perineum from Ischiorectal Abscess	Incision and drainage	1	0	1	0
		53	2	12	1
Chronic Epididymitis	No operation	1	0	1	0
Gonorrheal Orchitis	No operation	1	0	1	0
Orchitis following Prostatectomy	No operation	1	0	1	0
		3	0	3	0

Case XXII.—Double Spermatocele; Excision of One Sac and Incision and Drainage of the Other.

Joseph G., forty-four years old, was admitted April 22, 1903. His history dated back nine or ten years. Both sides of the scrotum were occupied by several fluctuating painless masses, flat on percussion, with no impulse on coughing, and giving all the signs of fluid. The testes were below and behind and slightly tender. The right scrotum was more tense than the left. Each side was about four inches long and three inches in diameter. At operation by the writer on April 25, under nitrous oxide gas, the right sac was excised. On the left side a simple Volkmann operation was performed. The fluid examined at the time showed numerous non-motile spermatozoa. On the right side the spermatocele was in the tunica and the entire parietal portion was removed, the testicle replaced and the scrotum drained. There was no disturbance in healing on this side, but suppuration took place on the other side necessitating a second operation on May 12, when the enormously thickened tunica was removed with prompt recovery. On June 10 the patient was discharged cured.

Case XXIII.—Congenital Inguinal Hernia; Undescended Testis; Bassini and Plastic; Cure.

Louis S., aged thirteen years, was admitted November 11, 1902. He had been kicked in the left groin by a boy two months before. He had always had one inguinal testicle. After the injury a large elastic swelling developed, which was repeatedly tapped but rapidly refilled. On admission the right testicle was normal but the left one was found above the external ring which admitted the tip of the finger. In the scrotum and reaching to the testicle there was a rounded fusiform swelling, fluctuating and dull on percussion. On coughing a mass came out of the external ring which gave the impression that it was connected with the larger mass like the handle of a hammer.

Operation by the writer on November 15 under chloroform anesthesia. The testicle was found in the canal at about the level of the external ring. There was no true hernia, but the testicle acted as a valve shutting off the sac at the external ring. The sac was emptied of its fluid and the epididymis was separated from the testicle along its upper pole and lateral aspect, thus lengthening the cord for a distance of three-quarters of an inch, *i.e.*, lengthening the testicle itself. The remainder of the operation was completed after the Bassini method for the radical cure of an inguinal hernia and the external wound left open. There was some infection, but healing finally occurred by December 13 when the patient was discharged cured.

Case XXIV.—Cystic Sarcoma of Undescended

Testicle; Exploratory Laparotomy and Aspiration of Tumor; Death.

Albert N., forty-three years old, was admitted August 26, 1903. He had had a left inguinal hernia for many years. He had never noticed the presence of more than one testicle. He was married and his wife had had one child. Two years before admission he began to complain of constipation and pain in the lower extremities. He tired easily and, at the same time, he noticed that he was gradually losing weight. He thought he lost at least twenty pounds in one year. Three months before admission he had noticed a mass in the abdomen which he thought had not increased in size and had never been tender. There was no fever or chilly sensations; no jaundice, bowels constipated. The urine had been normal. Lately he had complained of constant pain in the right lower extremity. On examination an enormous mass was found occupying the entire abdomen except the epigastrium and left loin. The mass was felt to be as large as an adult head. It did not move during respiration and it was not tender. It seemed to fluctuate in its upper portion; its lower portion felt hard and nodular. The edge was palpable in the right lumbar region. The tumor was apparently quite movable.

On August 29 an exploratory laparotomy under nitrous oxide gas was performed by Dr. Wiener. The incision was made from the ensiform to the symphysis pubis, exposing the tumor which was apparently a gigantic testicle, epididymis and cord. The growth was as large as a football and the testicular portion was cystic. This was aspirated and about 20 ounces of thick, bloody fluid withdrawn. Enormous veins composed the cord which was intimately adherent to the bladder; this in turn being connected with the testicle by a large gelatinous mass. Posteriorly several large masses of glands could be palpated and the broad pedicle of the tumor could be felt passing backward to the right into the hollow of the sacrum. The case was considered inoperable and the patient's pulse becoming weak the abdomen was quickly closed with through and through sutures of silk. August 31, two days later, he died of exhaustion.

Post-mortem examination was made by Dr. Libman. A considerable amount of blood and fluid was found in the abdomen and, on the left side, a large ring and hernial sac which was reducible. The testicle on the left side was normal. A large tumor (whitish on section) was found in the center of the right half of the abdomen, partly cystic and partly solid. Continuous with it below was a tumor the size of a walnut and from this ran the tube—corresponding to the epididymis—to a triangular pouch resembling a uterus. From the left epididymis the tube ran to the triangular pouch. Both tubes had a lumen which admitted a fine probe and both were attached to the pelvic wall. Below the triangular structure tapered into a canal, which in turn ended in a pouch behind the prostate gland. The ejaculatory ducts communicated with the above pouch. There were no structures behind the bladder corresponding to the seminal vesicles. The kidneys showed chronic interstitial changes, congestion and cloudy swelling. The spleen was large, congested and soft. The adrenals were negative. The liver was cloudy and congested. The entire pelvis was filled by a mass of new growth, white and firm. Veins negative. Microscopically the growth proved to be a round-celled sarcoma.

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THE TRACHEAL TRACTION TEST AS AN AID IN THE RECOGNITION OF THE ASTHMATIC LUNG.

BY ALBERT ABRAMS, A.M., M.D.,
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THE facts concerning the variation in the percussion note when percussion is executed over the larynx and trachea and certain maneuvers adopted have been firmly established in medical literature. With the widely opened mouth, the percussion sound is louder and becomes increased in intensity; the latter being still further augmented if the tongue is protruded. What is referred to as Wintrich's change of note, is the variation in the pitch of the tympanitic tone, when percussion is executed over the larynx and trachea with open and closed mouth. Opening the mouth raises the pitch of the percussion tone whereas closure of the mouth lowers the pitch.

Baümler observed in many persons that when percussion of the chest is done in the recumbent posture, variation in the pitch of the percussion note remains uninfluenced owing to the fact that the root of the tongue is guided backward, thus more or less completely blocking the entrance into the larynx and in this way interfering with variations in the pitch of the percussion note, the result of opening and closing the mouth. Every act of deglutition lowers the tympanitic percussion sound over the larynx and trachea owing to the fact that in swallowing, the epiglottis covers the laryngeal orifice and narrows it. When the head is thrown forcibly backward, the tympanitic percussion sound is also lowered. Eichhorst[1] attributes the latter change in the percussion note to mechanical causes, assuming that in that posture of the head the vertebral column is arched forward, thus narrowing the pharyngeal space.

That Eichhorst's conception of the cause of the change of the percussion note is undoubtedly wrong, the writer hopes to prove. As far as his knowledge extends, no endeavor has been made to employ the preceding observations practically. Wintrich alone has made a feeble attempt in this direction. He concludes that if, after percussion of the larynx and trachea with open and closed mouth, no change in the percussion note is observable, a nasal obstruction of some kind must exist. The tracheal traction test as employed by the writer consists in percussing the manubrium sterni first with the chin

[1] Physikalische. Untersuchungsmethoden der inneren Krankheiten. 1881, p. 228.

approximating the sternum and then again when the neck is forcibly extended on the sternum. In the former instance, the percussion note is resonant, or even hyperresonant; in the latter posture it is dull or even flat. The alteration in the percussion tone consequent on the foregoing maneuvers is by no means confined to the manubrium sterni but extends to the lung areas on both sides of the latter. While the change already referred to, is not conspicuously palpable to the tyro over the lung contiguous to the manubrium sterni, it is invariably present over the latter area to a degree which is unmistakable.

The writer has for many years employed what he calls the tracheal traction test and finds it invariably present in health, modified of course in intensity by concomitant conditions which also influence other percussion sounds. It is likewise invariably present in all lung affections with the exception of bronchial asthma. In the last named disease, it is not only absent during an attack, but in the interparoxysmal period as well; that is to say, whether the neck is flexed or extended on the sternum, the percussion tone over the manubrium sterni is in no wise influenced but remains the same. The writer is further warranted in concluding from his personal observations that the absence of the tracheal traction test is peculiar to idiopathic bronchial asthma, having found it to be present in symptomatic asthma as in the varieties known as cardiac and uremic asthma. In other words, the tracheal traction test was found to be negative in idiopathic bronchial asthma and positive in asthma of symptomatic genesis. In an affection like emphysema where pulmonary resonance is but slightly influenced, if at all, by both phases of respiration, the tracheal traction test was found to be positive in all the cases examined by the writer. If, in a case of idiopathic asthma improvement is noted, it proceeds commensurately with restoration of the tracheal traction test.

How are we to explain the negative tracheal traction test in asthma? As previously remarked, Eichhorst attributes the change in the percussion note over the trachea when the head is thrown backward to a narrowing of the pharyngeal space by the forward arching of the vertebral column. Insomuch as this narrowing would occur in the asthmatic as well as in the normal subject, we must seek elsewhere for an explanation. Mere traction of the trachea itself cannot explain it for when this structure is removed from the cadaver and percussed after stretching, the percussion tone, instead of being lowered, in reality, raised in pitch. What is lacking in the dead is supplied in the living subject, viz., the tonus of the bronchial musculature. Whatever theory may be adopted in explanation of the asthmatic seizure, we have no reason to doubt the overwhelming evidence in favor of the spasmodic theory, a theory which implicates the bronchial musculature. Even the recent interesting observations of Bullowa and Kaplan[1] do not negative the spasmodic theory. These investigators would have us believe that insomuch as the hypodermic use of adrenalin chloride will abort an asthmatic paroxysm, the angioparetic theory of asthma is favored to the exclusion of the spasmodic theory.

Seven years ago in a paper entitled "A Contribution to the Study of Heretofore Undescribed Neuroses of the Lungs,"[1] I insisted on the necessity of hypothesizing the existence of two distinct functions of the vagus nerve, or the existence of different fibers with two distinct functions: fibers which can dilate (bronchodilator nerves) and fibers which contract (bronchoconstrictor nerves) the lungs upon application of the appropriate stimuli. What I had then deduced as the result of mere clinical observation seems recently to have been conclusively established by the experimental investigations of Dixon and Brodie,[2] which demonstrated that the bronchial muscles are innervated by two sets of fibers, constrictor and dilator sets, both of which run in the vagus. If we have two sets of nerve fibers, we must have two sets of muscular fibers; and that this is reasonably certain is evidenced by the discovery of Aufrecht.[3] The latter asserts that the belief of only a circular layer constituting the musculature of the bronchi is wrong, and that by using the Biondi-Heidenhain stain a longitudinal muscular layer is also found to exist. My discovery of the lung reflex of contraction[4] further supports this belief. The writer contends that the theory of asthma must not alone be based on a spasm of the circular fibers of the bronchi but on an inability of the weaker longitudinal fibers to expel residual air imprisoned by the circular fibers. In employing adrenalin chloride after the manner suggested by Bullowa and Kaplan, the writer, while noting a fugacious abortion of the asthmatic seizures, observed the very pertinent fact that coincident with the dissipation of the paroxysm, the lungs which were formerly hyperresonant became dull on percussion. He then experimented with other agents in the healthy and asthmatic subject and noted that a reliable preparation of ergot, employed hypodermatically, was quite as efficacious as adrenalin and that there was likewise a translation of the percussion sound from resonance to dulness.

There is a preparation largely employed in this country by asthmatics for aborting their attacks which is phenomenally efficacious. The preparation in question is nebulized and while it is supposed to reach the lower air passages, its action is practically confined to the nasal mucosa. Employed after this manner, even in healthy subjects, there is an immediate translation of the normal lung resonance to dulness or flatness; in other words, we induce a veritable lung reflex of contraction discharged through the nasal mucosa just as we can induce the lung reflex of dilatation or the heart reflex through the same medium.

[1] Medical News, Oct. 24, 1903.

[1] New York Medical Journal, June 13, 1896.
[2] Journal of Physiology, March, 1903.
[3] Deutsch. Archiv. f. klin. Med., Bd. lxvii, H. 5 and 6.
[4] American Medicine, June 3, 1903.

These facts suggest evidence more in favor of the spasmodic than the angioparetic theory of asthma. Four years ago[1] I suggested a method of inhibiting the action of the heart as an aid in diagnosis. For clinical purposes, inhibition of the heart is best attained by voluntary contraction of the muscles of the neck. In some susceptible subjects, mere stretching of the neck suffices to inhibit the movements of the heart, a maneuver which stimulates the vagus, the inhibitory nerve of the heart.

The writer assumes that in applying the tracheal traction test a positive reaction denotes contraction of the bronchial muscle consequent on stimulation of the vagus. We can no longer deny the existence of the bronchial muscle, nor its innervation from the pneumogastric nerve. In the large bronchi and trachea, the muscular coat is well developed and in the trachea its contraction may cause considerable narrowing of the tube owing to the incomplete cartilages. The experiments of Riegel, Edinger and others prove conclusively that the bronchial muscle can be brought to contraction by stimulation of the vagus. In explanation of the dull sound supplanting resonance in the normal subject by tracheal traction, it is reasonable to suppose that owing to contraction of the bronchial muscle, the air in the trachea and bronchi is under considerable tension, the pitch becomes higher and the volume and intensity so decrease that, while percussion formerly yielded resonance, the same act now yields a dull or even flat sound. The negative results obtained in idiopathic asthma in the application of the tracheal traction test warrant the conclusion that in this disease, the tonicity of the bronchial muscle is so reduced that it no longer responds to stimulation of the vagus such as is produced when the head is thrown forcibly backward. The following conclusions may be formulated:

1. When the head is thrown forcibly backward, the normal resonance obtained by percussion over the manubrium and lungs contiguous thereto becomes converted into a dull or flat sound. This maneuver the writer has called the tracheal traction test.

2. The tracheal traction test is positive in health and in all cardiopulmonary affections, but it is negative in cases of idiopathic asthma.

3. The recognition of this test affords a valuable aid in the diagnosis of idiopathic asthma and assists in its differentiation from symptomatic asthma and other spasmodic pulmonary affections which suggest an asthmatic genesis.

4. The maneuver specified as tracheal traction evokes contraction of the bronchial muscle by stimulation of the pneumogastric nerves.

5. In asthma the tone of the bronchial muscle is so reduced that it no longer responds to vagus stimulation brought about when the neck is forcibly extended on the sternum; hence the tracheal traction test in idiopathic asthma is negative.

[1] Transactions of the Medical Society of the State of California, 1900.

ACUTE THYROIDISM FOLLOWING CURETTAGE.[1]

BY BROOKS H. WELLS, M.D.,
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SINCE the time when the Roman matron measured with silken ribbon the throat of the bride before and the day after marriage, to determine by its rounded increase that she had been a pure virgin, the sympathetic relation of the thyroid gland to the pelvic organs has been vaguely known; but hardly more than a decade has passed since we began to appreciate the various facts that will in time lead to an accurate knowledge of the functions and physiology of this and the other ductless glands.

Under certain conditions there occurs in those individuals who have been the subjects of a thyroid tachycardia a virulent acute toxemia characterized by a well marked group of symptoms. This toxemia may follow operations upon the thyroid itself, operations upon the pelvic organs, or, more rarely, operations upon the breast or other parts of the body, or any marked nervous strain.

The exact mechanism by which the symptoms are produced or by which the function of the gland is disturbed or excited is not definitely known. The disturbances after operations on the thyroid itself have been attributed to an outpouring of toxic material into the blood, either as the result of the manipulation to which the gland is subjected or from a leakage and absorption from its cut surfaces. These causative factors can be ruled out when the thyroidismus follows operations on other parts of the body. In cases similar to the one recorded below it seems certain that the condition is the result of a reflex disturbance of the central nervous centers and the sympathetic centres that control the activity of the thyroid gland, or, as has recently been suggested, of the parathyroids. The condition is often rapidly fatal, death occurring within the first three or four days from cardiac exhaustion. When recovery ensues the symptoms rapidly or gradually disappear until the individual reaches the status present before the attack.

The following case of acute toxemia with the so-called thyroid symptoms following curettage seems to the writer to posses features of interest which make it worthy of record:

Mrs. X., aged fifty-three years, was referred to me on November 3 by Dr. A. I. Miller, of Brattleboro, Vt. She had passed the menopause at the usual time, but for the last six months had had repeated small bleedings from the uterus, which was not enlarged and was freely movable. The patient was nervous, thin, and poorly nourished. She had had for many years a slight enlargement of the right lobe of the thyroid, an excitable rapid pulse, slight tremor, no protrusion of the eyeballs. Auscultation of the chest revealed a few bronchial râles. No other pathological condition was discovered. To exclude the possibility of beginning cancer of the fundus uteri as a cause

[1] Read before City Hospital Alumni Association.

for the postclimacteric bleeding a curettage of the uterus was advised. This was done at Miss Alston's Sanitarium, with strict asepsis on November 5 at 10 A.M. The scrapings from the endometrium were examined by Dr. Jeffries, pathologist at the Polyclinic, who reported that they showed only a moderate grade of endometritis. There were no further symptoms local or general that could be referred directly to the curettage.

The anesthetic was given by Dr. Bennett and was, as usual, gas followed by ether. After a few breaths of ether the heart became so rapid that Dr. Bennett considered it wise to change to chloroform, under which the heart beats became slower. The time from the beginning of the anesthetic to the return to consciousness was a little less than a half hour.

Six hours later the patient was flushed, tremulous, nervous, voluble, but not worried and with mind clear. The pulse had risen to 130 and became more rapid on any little excitement. Temperature was 100.5° F.

Twenty-four hours after the operation the flush, tremor, nervousness and volubility were increased; the pulse had risen to 178 and was at times uncountable; the temperature was 99.5° F.; there was profuse sweating, a watery diarrhea, marked irritability of the bladder with polyuria, many soft râles all over the chest, and vomiting. The thyroid was perceptibly enlarged, especially on the right side, and presented a quite apparent thrill. There was marked throbbing of the heart and large arteries. Examination of the urine showed a sour odor, reaction neutral, sp. gr. 1,012, no albumin, no casts, innumerable colon bacilli, and a few pus cells. These symptoms of an extreme toxemia continued to the end of the first week, when the temperature reached 101.6° F. and the auscultatory symptoms of bronchitis became more marked, though there was but little cough and expectoration. Blood examination at this time showed no leucocytosis and no typhoid reaction.

On the tenth day the temperature reached 104.8° F. with a pulse of 148. On the eleventh the bronchial symptoms began to subside and in a few days became insignificant.

From the fifteenth to the twenty-fourth day the patient's condition was such that death was expected at any time. The toxic symptoms continued, the tongue became dry and brown, there was extreme weakness, and the usual relation between temperature and pulse was reversed so that the heart action was most rapid and weak when the temperature was lowest.

The diarrhea ceased to be troublesome on the twenty-first day and on the twenty-fourth the patient was able to take small amounts of solid food by mouth. From this time on improvement was steady but slow, until the patient reached a condition approximating that before the operation.

Treatment.—At the beginning it was thought that some of the symptoms might be dependent on an intestinal toxemia and the patient was given calomel followed by a saline and repeated high colonic flushings. The bladder for several days was washed out with a boric acid solution at eight hour intervals, the washing being followed by the injection and retention of two ounces of a 10 per cent. argyrol solution. The diarrhea was finally controlled by tannigen by mouth, gr. x every three to six hours as needed, and starch and decod. tr. opium, m.x. by rectum every six to eight hours. The insomnia was relieved by opium and trional by enema at night, in doses of from xx grs. at first, down to v gr. at a later period. As it became impossible to make the patient retain food given by mouth, rectal alimentation was employed more or less from the eleventh day to the twenty-second. Beef juice and white of egg were the foods best retained and digested by the stomach. Solid food in small amounts was begun on the twenty-fourth day. The heart action and general condition were not benefited by any drug; colonic flushing, strychnine, digitalis, belladonna, suprarenalin, alcohol, all seeming to do more harm than good.

Since writing the above the author has received the reprint of a most interesting paper by Dr. Farquhar Curtis, entitled "Thyroidectomy and Sympathectomy for Exophthalmic Goiter," in which he reports several fatal cases of acute thyroidism and discusses the danger of thyroid poisoning in operations upon persons with exophthalmic goiter. Curtis notes the same symptoms seen in the author's case, the same uselessness of drugs in controlling the excited heart action, and the rarity of recovery when serious symptoms appear. In nearly all of his cases the temperature was high, but with the rise of temperature there was no leucocytosis. In each of the five fatal cases recorded a trace of albumin and granular casts were present in the urine after the onset of the toxemia. In the case noted above there were no traces of albumin or casts until the third week and then a few small hyaline casts and a trace of albumin were present for a few days.

A NEW SLIDE BOX; ALSO A METHOD OF RECORDING EMBEDDED TISSUE.

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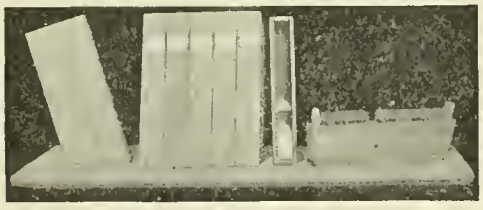
In the *American Journal of the Medical Sciences* for May, 1902, Miss Mary Kirkbride described a slide cabinet, devised by her brother, the late Dr. Thomas S. Kirkbride. Briefly described, it was the application of the card index principle to slide storage, and consisted of a case or shell holding a number of drawers which are made of such size as to hold slides in an upright position when the drawer lies flat on the table, where they can be handled as one does a card index. This shell is inclined at an angle of 75 degrees. The back of each drawer is made at a complementary angle so that the slides lie flat when the drawer is in the case. The advantages of this cabinet are

numerous, chief among them being compactness and the fact that the slides are self-indexed.

After purchasing and using one of these cabinets we were still enthusiastic about them, but had two strong points of criticism, the first being that a number of slides could not be filed as they were too broad, and therefore did not move freely in the drawers. This is a serious drawback as it prevents filing slides in their proper relative position, and when the slide is one of a series the trouble is still more irritating. The other point of criticism is that the cabinets are too expensive. They are most beautifully made, which accounts for the high price ($25) at which they are sold. They are built of 12 drawers, each holding 100 thin slides, so that we pay over two cents storage for each slide in the cabinet. Miss Kirkbride estimates the containing capacity of the cabinet at 1320, which brings the cost below two cents, but even this is an abnormally high price to pay for slide storage. In a laboratory where a certain lot of slides are in constant use the Kirkbride cabinet is most excellent, but as soon as the number of slides becomes large, and they are not in constant use, then the cost becomes excessive.

The principle of the cabinet is so very convenient that Dr. Brush and I experimented to devise a slide box which would preserve the same principle of slide filing, and yet would be about as cheap as the ordinary slide boxes on the market. The result of our experiments has been that we have settled on the box described below.

The boxes are in form essentially similar to the drawers in the Kirkbride cabinet. They are made of one-quarter inch poplar. The outside dimensions are, top 10 1/16 by 1 9/16 inches, the bottom 8 10/16 by 1 9/16 inches, height 4 inches. The lateral view shows a trapezoid, one end being at an angle of 75 degrees. It is on this end that the box rests, when not in use. With lid removed the height of the box is 2½ inches, giving ample room for manipulation of the slides. The lid is



A B C D

A. Shows side view of box. *B*. Shows boxes as they appear when on shelf and not in use. *C*. Shows how slides lie in box when not in use. *D*. Shows box in use. When the box is filled with slides the movable wooden piece is dispensed with.

retained in place by a hook on the "straight" end, the angle at which the inside cleat is placed retaining the other end. The inside width of the box is 1 1/16 inches, giving ample room for slides even when slightly broader than their supposed measurement of one inch. A piece of wood three inches by seven-eighths inch with a brass spring at its side is used to retain the slide in position when the box is not full. Guide cards which stand one-quarter of an inch higher than the slides are used to separate the different groups or series of slides. Each box holds 115 thin slides. A label is placed on the lid and the boxes placed on shelves like books, and a particular box can be readily found and removed without disturbing the others.

To file slides in these boxes it is necessary that a bristol board label be glued upon each end of the slide as described by Miss Kirkbride in the article above quoted. We have found that, if labels of unequal size are used, when the slides are stacked, the curl or warp of the larger label being greater than the smaller one, slides do not lie flat as is desired. We therefore use the same size label on each end of the slide with satisfactory results. These labels are cut from cardboard .5 mm. thick and measures 12 mm. x24 mm. On the upper card is placed the name or case number, the tissue and date; on the lower the staining method or such other memoranda as are desired. In lettering one should remember that the slide stands vertically when the label is read. The cost of these boxes was 16 cents each made in 200 lots. The cost could probably be reduced by two cents if 1,000 were made at one time.

In the first lot of boxes which were made for us a large number had to be rejected, as the maker had not been careful in his measurements and had made them too narrow, so that it was impossible to use them for slides 25 mm. wide, which is the narrowest slide in use. The slides which we have vary from 25 mm. to 26.5 mm. and at least a millimeter should be allowed for free play. Care should be taken to have the boxes made of thoroughly dried wood as shrinking may further narrow the box. One should be careful to avoid falling into the opposite error of making the boxes too wide, as the slides will not lie well if there is too much side play.

For a number of years there has been in use at the laboratory of the Sheppard and Enoch Pratt Hospital a method of recording the tissues embedded for section cutting which has been found to be convenient and practical.

A register of all tissue is kept in a book with vertical columns which are headed according to the various media employed in the method used; and in these columns, on the line devoted to the special piece of tissue in question, is noted the date and time of its being placed in any particular medium. Each method of fixation, also certain special methods of preparing tissue, for example, the Marchi method, is denoted by letter. Tissue from autopsies made at the hospital have the autopsy number prefixed to this letter, and in addition a regular number denoting its sequence in the fixation method. This prefix number is not given to tissues derived from any other source, as that sent in from outside, or from experiments made on animals. The numbers are given consecutively to tissues in the sequence in which they are placed in the fixation methods employed: for

example, A53, and if from a case dying in the hospital, 14A 53, the autopsy number being prefixed.

Other parts of the brain, or other organs, have additional numbers added; for example, the optic chiasm might be 14A 53.1, and the right kidney 14A 53.2. While the kidney or other organs perhaps should have other numbers to differentiate them from nervous tissue, it has been found that it is less complicated that all organs from the one case fixed by the same method should have a common fixation number, and be differentiated by the added number. It may be said in criticism that the autopsy number is sufficient for this purpose; but it must be remembered that a good deal of tissue is handled which does not come from the hospital autopsies, and with these no autopsy or prefixing number is used. The autopsy number serves to more easily identify all tissues belonging to the same case no matter how fixed. It is obviously impossible to give the same fixation number to all tissues belonging to the same case when fixed by different methods as it would make confusion in those methods which are used infrequently.

At autopsies it is our custom to have two large jars containing Zenker's fluid labeled respectively *right* and *left*. Into these are placed the tissues from the organs of the right and left sides of the body, whose character can be easily recognized by inspection. After being taken to the laboratory the contents of each jar are entered in the book, the numbers given in order, and on the first line is noted the time of placing the tissue in solution, ditto marks serving to show the time of fixation of all the other tissues. The jar is then labeled with the tissue numbers and requires no further labeling until the tissues are mounted and the number written on the fiber block, as is the usual custom. Each change of fluid is noted in the appropriate column by the date, and the time when this last is considered necessary. It will thus be seen that we have a very convenient method of keeping record of tissue being prepared for mounting, and this record being permanent we can at once refer to it when any question arises as to the preparation of any section. A glance at the accompanying diagram will perhaps make this a little more clear to the reader. Here a check mark denotes that the tissue has been cut, and a cross, that the block has been thrown away.

1901.		Formalin.	Washed.	Muller's.	Washed.	70 Per Cent. Alcohol.	80 Per Cent. Alcohol.	95 Per Cent. Alcohol.	Absolute Alcohol.	Absolute and Ether.	Thin Celloidin.	Thick Celloidin.	Mounted.	Remarks.
8A37.10	Liver.....	7–8 12 M.				4 7–23 P.M.	7–25 10 A.M.	7–27 2 P.M.	7–29 9 A.M.	7–30 9 A.M.	8–1 9 A.M.	8–3 3 P.M.	8–6	
37.11	Spleen.....	"				"	"	"	"	"	"	"	"	
9A38.	Brain.....	9–15 12 M.												Miss Blank.
" 38.1	Right Lung...	"	9–27			9–27	9–29	10–1	10–3	10–4	10–6	10–10	10–12	
" 38.2	Ing. Gland....	"	"			"	"	"	"	"	"	"	"	
" 38.3	Pancreas.....	"	"			"	"	"	"	"	"	"	"	
" 38.4	Right Kidney etc.	"	"			"	"	"	"	"	"	"	"	

In labeling our slides we use two bristol board labels, one on each end of the slide so that they may be stacked in the boxes described above, On the one is written the tissue number, the name of the tissue, and date of staining. On the other label is placed the name of the staining method, or any other data which we desire to record on the slide. With our system of numbering we are of the opinion that we have a maximum of information with a minimum of writing. Our plan has had a thorough trial and has worked most successfully for a number of years, so that it is now published with the hope that it may prove as useful to others as it has proved to us.

MEDICAL PROGRESS.

SURGERY.

Common Duct Stone and Septic Cholangitis.—While it is generally recognized that jaundice and pain are the commonest and often the only symptoms indicating the presence of a stone in the common bile duct, it is not as well recognized that a certain small number of these cases present, in addition, chills, fever and sweating so characteristically intermittent in character as strongly to suggest a malarial infection. G. E. Brewer (Med. Rec., Feb. 20, 1904) reports three cases of this type illustrative of different degrees of severity. He points out that considerable difference of opinion has existed in the past regarding the etiology of these septic symptoms, some holding that the febrile crises were due to bile absorption through abrasions in the duct mucous membrane produced by the foreign body, while others regarded them as nervous in character and similar to some of the varieties of urethral fever. Most recent observers, however, believe them to be due to septic absorption from infection of the duct, a true infectious cholangitis. Neglected cases coming to autopsy seem to prove this, for the duct is hypertrophied and thickened, the liver the seat of multiple abscesses, and the bile changed in appearance by the presence of pus and blood. The only treatment that can hold out any hope of permanent relief is surgical, choledochotomy, removal of the stones, and hepaticus drainage. The cases reported illustrate how the condition may vary from a scarcely

demonstrable inflammation of the mucous membrane of duct to a chronically thickened wall with surrounding inflammatory tissues, a duct filled with pus, blood and bile, and an enlarged, tender liver. If operation is done early the recovery is usually assured, but if neglected they usually suffer greatly and finally die from a combination of exhaustion, sepsis, and cholemia. In practically all cases the stone is a movable one, and the complete obstruction to the flow of bile to the intestine is due to the swelling of the mucous membrane, evidenced by the fact that bile may be absent from the stools for days after the removal of the stone. This fact emphasizes the necessity of hepaticus drainage in all cases.

Unavoidable External Esophagotomy for the Extraction of a Foreign Body.—The greatest number of foreign bodies that become lodged in the esophagus are either expelled through the mouth or propelled downward into the stomach; this is accomplished either by Nature herself or with the assistance of the surgeon. It is only when it becomes impossible to push the body up or down, for some reason or other, that an external section of the esophagus is called for. BARATYNSKY (Roussky Vrach. No. 12, 1904) reports the case of an insane patient who was admitted with pain in the neck and inability to swallow. According to the nurse the patient had swallowed on the morning of the same day a large stone which the author was unable to dislodge either one way or another. Under chloroform the operator succeeded in extracting through an incision 7 cm. long a stone of roundish irregular form 24 grams by weight. The patient made a complete recovery. The symptoms of this condition are not always clear enough to indicate surgical interference, and Trosseau's sound is often of great value in determining the nature of the body, the depth of where it is lodged and so on. No less important is investigation with the X-rays, which gives good results in the majority of the cases; next to this in diagnosticating the condition is esophagoscopy. In cases where the foreign body has sharp edges or produces considerable hemorrhage immediate esophagotomy is indicated, especially where there are also present inflammatory infiltrations about the neck. As regards the operation itself the anatomy of the parts renders it comparatively easy in early cases. The condition becomes, however, obscure in cases in which inflammatory processes induce considerable disturbance in the anatomical relations of the surrounding structures; the technic of the operation then becomes complicated. The patient may be given liquid food per mouth soon after the operation. The mortality of the operation is variously estimated by various authors and ranges between 20 per cent. and 21 per cent. The earlier the operation the more favorable the result; this, in unfavorable cases, is due chiefly to ulcerations, perforations with attendant purulent foci, hemorrhage, general marasmus, etc.

Chronic Appendicitis.—A discussion on this subject was recently held before the Surgical Society at Paris by GUINARD and LEGARS (Gazz. d. Osped., April 7, 1904) summarizes the following important points: (1) The frequency of unrecognized cases of appendicitis; (2) the frequent coexistence of appendicitis with other diseases of the abdominal organs, when the pain present at the time is almost always of appendicular origin; (3) the necessity for an examination of the appendix in every laparotomy and the extirpation of the same whenever in doubt as to its condition. The authors go even further and extirpate the appendix in every laparotomy that they are called upon to perform. If this procedure, according to them, would have been adopted by them before, they might have saved the life of a woman who succumbed to perforating appendicitis six months after she had been operated on for a uterine fibroma. As regards the frequency of unrecognized cases of appendicitis they report the case of a young girl who had suffered for a long time, and especially so during her menstrual periods, from pains, and in whom there could be detected some tenderness in the right iliac region around the appendicular site. The appendix was found diseased and with its removal the pains ceased. In another girl in whom the pains recurred only during menstruation they disappeared after the extirpation of a diseased appendix. The term appendicalgia should only be applied to cases of appendicular pain in which no organic lesion of the organ can be detected with certainty. In the hysterical there occur painful ovarian areas which simulate very much pains of true appendicitis. It must, however, be remembered that pain is not the principal symptom of appendicitis, for on one hand we do not know the cause of pain in appendicitis, and on the other hand there are many determining factors of pain at McBurney's point. The authors have especially observed this painful area in cases of stercoral typhlitis in whom an evacuation of the intestines causes an immediate disappearance of the painful spot, and they even observed a similar occurrence in a case of pneumonia. They also referred to an appendectomy in the early stage of typhoid fever under the impression that the pain in the right iliac region, complained of by the patient, was referable to a lesion in the appendix.

NEUROLOGY AND PSYCHIATRY.

Are Nervous Diseases Increasing?—Many writers state on apparently the highest authority that nervous diseases, more particularly those of a mental nature, are rampantly increasing. JOHN M. RHODES (Brit. Med. Jour., March 12, 1904) reports that the rise from 87,000 to 116,000 in the number of certified insane is a grave question for all. There are probably two factors which have not been adequately considered in the explanations attempted. The first is that undoubtedly in the last twenty years there has been a marked change in the attitude of the public to the institutional treatment of sick friends and relatives. This has been most thoroughly demonstrated in the case of infectious disease such as tuberculosis, and a glance at the increase in the sanitaria both in Europe and America, show that those families having the burden of insane members upon them have not been any less anxious to accept sanitarium treatment than in the case of patients suffering from infectious diseases. Not alone has this been due to the increased intelligence and the decreased opposition of the layman to the public treatment of his insane, but to the fact that he has been obliged by the segregation movement of the last twenty-five years, to dwell in small quarters in huddled tenements. This factor has probably counted more than any other in stopping the home treatment of the insane and must be considered when interpretation of the records of such towns as London, Manchester, New York and Chicago are undertaken.

Tetany in Colitis and Phthisis.—Tetany and mucomembranous colitis are both somewhat rare and the occurrence of each in a tuberculous case at the same time is interesting. H. H. THOMSON (Brit. Med. Jour., March 12, 1904) gives the history of a young woman aged twenty-one years, who was recently brought into the sanitarium of which he is resident physician. Her condition on admission was good. During the first three months she gained 17 pounds. She gradually began to complain of pain after eating, and constipation became extremely marked. At this moment, a sudden change took place in the disposition of the girl. From being happy and contented, she became irritable and hysterical and tremors gradually developed. The stools

at the time became soft and slimy, were occasionally streaked with blood and developed the typical signs of membranous colitis. The shreds did not ever exceed four inches in length. The temperature had slowly risen, but it scarcely reached 102° F. From this time on she improved and was virtually convalescent, when, suddenly, without warning, after a severe cramp, considerable blood was passed by rectum. Immediately after this flow, she had a severe and characteristic attack of tetany. She was for a time inarticulate. Finally she was able to say: "I cannot open my hands." The thumbs were flexed and pressed tightly into the palms, the fingers flexed at the metacarpophalangeal joints, while extended at the terminal joints. The hands were flexed at the wrists and the arms were crossed on the chest. The feet were arched and extended. The lips were pursed as though attempting to whistle. The face was pale, the extremities cold, the pulse feeble. There were but two severe attacks, the second occurring three hours after the first. The attacks were controlled by hypnotics and after a large amount of mucomembranous material had been passed, the patient gradually recovered. The relationship between a characteristic paroxysm of tetany with a form of colitis, which is now regarded as a neurosis, presents an interesting clinical picture.

Differential Diagnosis of Extra and Intraspinal Tumors.—Very few domains of medicine are beset with such difficulties as the diagnosis of spinal tumors. The proper analysis of the case is often rendered impossible by indolence or clouded intelligence on part of patients. According to V. Malaise (Deutsch. Arch. f. klin. Med., Vol. 80, Nos. 1 and 2) the variety of tumor may give some clue as to its position. Thus, if a carcinoma is diagnosed from metastasis in the periphery or in the internal organs, the tumor is almost always extraspinal. The rule does not hold so strictly for sarcomata, since a few intramedullary tumors of this type have been reported. Syphilitic or tuberculous granulomata may occur in either place, but echinococcus cysts are generally outside of the spine. The presence of albumose in the urine generally speaks for a bone-tumor while in sarcoma, cytodiagnosis of the cerebrospinal fluid may aid. Radiography is of value where the growth is situated in the vertebral column but is unreliable if in the meninges. Intramedullary gliomata are often accompanied by internal hydrocephalus and tumors occurring with spina bifida are generally extraspinal ligomata. There are no symptoms which definitely determine the position, and one must be guided by their succession, duration and time of appearance, with extramedullary neoplasms, the first sign of which is usually pain; with an intraspinal position this is absent at first, unless the location is close to the surface of the spine, near the posterior roots. In the few exceptions to this rule, the pain was different; that is, it did not persist for months and years as the only symptom. Later in the course, spinal tumors may also cause pain, but this is generally situated in the periphery, over a large portion of the body, since due to irritation of intraspinal fibers. The most pain is experienced in tumors of the bone, the least in gliomata of the cord or tumors situated in the anterior portions of the cord. An angular kyphosis will speak for caries or carcinoma of the bone, while a round kyphosis occurs both with extra and intramedullary growths. Another valuable sign of the latter is dissociated anesthesia, such as loss of temperature and pain sense with preservation of tactile and muscle sense. In case of gliosis, this will be homolateral, while, if the result of compression, it will be observed in the opposite limb. Irritation of motor nerves and motor paralysis, especially if a large number of anterior roots are involved in a short time, is more common with extramedullary position. The distribution of symptoms is also of value; thus in meningeal tumors it is generally unilateral, less so in bone tumors and quite exceptionally in spinal growths. Brown-Séquard paralysis is thus seen most often with the first-mentioned variety. Owing to the fact that inflammation and hemorrhage is common within the spine, the course is often not so gradual and progressive as without the spine, and the most unexpected symptoms may appear suddenly during any stage of the disease. Temporary improvement is also seen sometimes, though complete destruction of a sensory nerve by a growth external to the spine, may also tend to alleviate the patient's suffering.

THERAPEUTICS.

The Chlorine Technic.—The acetic chlorine solution has thus far met every demand made upon it. Although planned solely as an aid in obstetrics, Douglas H. Stewart (Am. Jour. of Obst., January, 1904) finds that it has strongly appealed to surgeons. After much thought upon this subject and several thousand culture tests covering more than twenty methods of hand sterilization, the author believes that acetic acid is the very best disinfectant; two teaspoonfuls being combined with four of calcinated lime and one quart of cool (70° F.) sterile water. Five minutes' scrubbing with this after five minutes of mechanical cleansing, has always prevented the growth of streptococci, staphylococci and *Bacillus coli communis*, after the hands were intentionally contaminated with those germs in pure culture. It suffices to say only that in practice it is a good rule to consider the antiseptic power equal to 1-500 corrosive sublimate. Chlorine does not escape from the acetic solution very readily, since the acetic acid and lime form a hypochlorous acid. As this is one of the surest bleachers, antizymotics and antiseptics known, it would be most natural to use it in its own proper form were it not for the unfortunate fact that it can only be preserved on ice or in a refrigerator. All germs on the vulva will be destroyed if the solution be used in half strength. Let the solution dry as it will. About one in 15 cultures will take after the washing. In 18 attempts after three washings one hour apart, all were negative. It is a simple matter to remove the objectionable odor of chlorine by washing the hands with a solution of two tablespoonfuls of acetic acid in water.

New Methods of Phototherapy.—In a recent publication Dreyer, of Copenhagen, reported some interesting experiments in connection with the eosin stains when combined with the Finsen light. He found that the addition of a very small amount of erythrosin to the culture media of bacteria caused a very much greater sensitiveness on their part to the yellow and green rays which were otherwise ineffective. The action may take place through a thick layer of skin and he recommended the injections of sterile solutions of this fluid by the Schleich method in order to render the deeper tissues accessible to the Finsen rays. Neisser and Halberstädter (Deut. med. Woch., Feb. 25, 1904) have lately made some practical experiments with this procedure. They treated 25 cases of lupus, scrofuloderma, tuberculous lymph glands and skin cancer. A solution (0.1 to 1 per cent.) of erythrosin in sterile (85 per cent.) salt solution was injected as deep as the effect was desired. In from two to five hours later the Finsen light was applied for fifteen to twenty minutes or longer in the case of a carcinoma. The authors' experience fully confirm the claims made by Dreyer and with it the Finsen rays may be made to penetrate depths never before reached.

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FOOD SUBSTITUTION.

Dietary substitution, and the pernicious habit of giving "something just as good" for human nature's daily food, seem just now to be peculiarly rampant on both sides of the Atlantic. Our British cousins, however, appear to have gotten the best of us, as their cat transactions are reported to be conducted at London in rather a wholesale manner, while as yet we are still doing a small retail business, with the balance of trade decidedly in their favor.

The attention of the London police was first called to the matter by the proprietor of a boarding house, who applied to a magistrate for a writ of ejectment against an Italian tenant, on the grounds that he killed and ate cats. As it was discovered, however, that the English law does not recognize such gastronomic eccentricities as a sufficient justification for the summary dispossession of a tenant who pays his rent, the matter was taken up, according to the *Post*, by the Society for the Prevention of Cruelty to Animals. For several nights a dozen or more of its most skilful agents have been stalking the Squares of Bloomsbury, where the cat purveyors are reported to be doing their hunting, in the hope of catching them red-handed. Thus far, however, they have not succeeded, as either the wily Italians have let *I dare not* wait upon *I would*—like the poor cat i' the adage, or, as an official of the Society rather naïvely explains, it is "a difficult matter to prove the guilt of men who swallow the evidence of their crimes."

In addition to this, the Society for the Protection of Stray and Homeless Cats, of which Her Grace the Duchess of Bedford is president, has enlisted a large force of amateur detectives in the pursuit, by offering a substantial reward for the arrest and conviction of these ruthless foes of Tom and Tabby; while Russell Square and Guilford Street are filled with an army, built on the Sherlock Holmes plan, the pay of which would be sufficient, as Pope says, to endow a college or a cat.

Up to the present time, however, Her Grace seems to have elicited nothing farther than the statement of an Anglo-Italian authority, that while cats are considered to be a great delicacy in Italy, the State forbids their sale as food and on that account they are furnished as rabbits by the butchers. "They are," he says, "bought as rabbits and eaten as cats, and the proper way to cook them is to roast them in an oven, until brown, with onions, bay leaves and parsley, red wine and herbs. They are not nearly so good when boiled. Nor can English-bred cats be compared with Italian cats. The latter are much better cared for and are fed on the best of milk."

All England is taking part in (the discussion, though London is now the storm center, while in the United States, Pennsylvania seems to be in the area of the greatest depression, for if the expression "cats and dogs" is suggestive of a rainstorm, that of cats and rabbits will prove reminiscent of a cyclone, at least to the inhabitants of Ebensburg. For a boarding-house keeper in the "little Italy" of that quaint old town, finding that his guests were growing weary of risotto and spaghetti, made up his mind to try a change in his bill of fare so as to widen the horizon of his commissariat.

Now the Italian mind is a clear mind, and one that is, in the end, apt to achieve results. Its methods, however, are tortuous rather than direct, which makes it more adaptable to the requirements of diplomacy than to the necessities of hotel keeping. So this Latin boniface, instead of seeking his game in the open market, made a playful wager with his friend, one F. Benson, of Barnsboro, that the latter could not shoot a rab-

bit. No marksman cares to have his skill impugned, so Mr. Benson, having been successfully nagged up to the shooting point, departed, leaving this diplomatist to make the preparations to cook his hare, even though it had not yet been caught. But our modern Machiavelli knew men, if he did not rabbits, and the watched pot was boiling when Benson returned with what he called "a fine large cotton-tail." Not only had the thoughtful nimrod shot the beast, but he had skinned it too, so that the feast was ready at the appointed hour.

As to the enjoyment of the partakers, there can be no question, for they, one and all, declared that it was a dish fit to be set not only before an ordinary every-day kind of a king, but was worthy of even Victor Emmanuel himself. "Viva Garibaldi!" sang the chorus, and there was a sound of revelry by night, interspersed with the twanging of guitars and the strident tones of the street piano. But this is a world of sharp and abrupt contrasts, and there was no gleam of light in the windows of a neighboring house, to show the expectant faces pressed against the darkened panes. For the mice were all that played in that bereaved home, and the missing cat did not come back.

How the substitution was discovered we cannot say. Perhaps the baited hunter, proud of his prowess and the nine lives that had been snuffed out at a single shot, grew boastful and confided to his wife, that he, like care, had killed the cat. Or it may be that he met a bunny in a lonely spot, and having read the recent descriptions of the audacious courage and aggressive ferocity of Brer Rabbit, he feared to tackle him alone. He might miss him, or slightly wound him, and then be at his mercy. For rabbits, they say now, have more courage and less discretion than Mississippi bears.

But, be this as it may, the cat was fairly out the bag, and his poor garlic-tinctured bones were picked over in hot anger by the quondam friends. Benson demanded payment of the bet, and when this was repudiated he took the chances of the Mafia's wrath, by playful but indiscreet allusions to "a d——d Eye-talian cat-meat man." But even if he escapes the vengeance of the Carbonari and the terrors of the evil eye, his dream of future peace is ended. For no one kills a cat unscathed, and his guilty conscience in its troubled sleep will dream "of journeys to St. Ives."

"Let Hercules himself do what he may
The cat will mew—the dog will have his day."

NON-MALIGNANT NEOPLASMS OF THE THYROID GLAND WITH METASTASES.

It may not be quite paradoxical to speak of metastases occurring in cases of non-malignant growths of the thyroid gland, for although the absence of generalization is one of the characters of non-malignant neoplasms, exceptions to this rule are not unknown. Thévenot and Patel (*Gazette des Hôpitaux*, 1901) have shown that myxomata may recur locally and even become generalized, while in his thesis, upheld at Geneva in 1882, Michaloff demonstrated that chondromata might become generalized to such an extent that secondary deposits of the neoplasm were found in the lungs, heart, brain, spleen, etc.

At the present time it would appear as proven that ordinary goiter, a non-malignant growth par excellence, can also give rise to metastases, as pointed out by Patel, in this year's March issue of the *Revue de Chirurgie*. The size and age of the goiter do not appear to have anything to do with the production of metastases; the histological make-up of the tumor governs all. Patel believes that goiters giving rise to metastases are always of the colloid variety and that the secondary deposits are more especially found in the bones and lungs. The bones most usually involved are those of the skull, pelvis or spine, in other words, the flat bones. Of all the viscera, the lungs are most frequently the seat of these metastases, and in 1903 Glockner reported the case of an enormous pulmonary thyroid teratoma at the Obstetrical Society of Leipzig.

One of the most interesting features of goiter giving rise to metastases resides in the fact that generalization of the neoplasm characterizes the entire affection. In those goiters giving rise to metastases there is nothing particularly worthy of note in the tumor itself or in the thyroid gland, because quite frequently the goiter is so small that its presence is unobserved. It is for this reason that in all the reported cases it is stated that the thyroid gland appeared normal or that the organ presented signs of ordinary goiter. Carcinomatous transformation of the gland has never been observed in the case under consideration.

There consequently is nothing which would indicate that a goiter will give rise to metastases; and on the other hand, when metastases occur there is nothing characteristic in them. Metastases of the bones of the skull give rise to attenuated symptoms of cerebral compression while those of the vertebræ produce incomplete para-

plegia and neuralgia of the limbs. Metastases in the lungs do not produce any symptoms apparently, so that it can readily be seen that secondary deposits from a non-malignant goiter are rarely discovered until the case comes to necropsy.

The idea that a non-malignant neoplasm may become generalized is so paradoxical that in spite of the recorded cases, one has questioned whether the starting point of the metastases was not to be found elsewhere than in a non-malignant growth of the thyroid gland. Housell believes that the origin of the metastases is to be found in the parathyroids but this opinion seems to be rejected at the present time, while Eberth and Wolfler have contended that the so-called non-malignant goiter was in reality an unrecognized malignant neoplasm of the gland. This opinion does not appear to have gained much support because the histological study of goiters with metastases has never demonstrated the presence of epithelial nests which are characteristic of carcinoma and has simply given the picture of a normal thyroid or one having undergone colloid degeneration. Consequently one has been led to believe that a non-malignant goiter may give rise directly to distant secondary deposits.

The prognosis of metastatic goiter is not easy to decide for the simple reason that the process is only discovered at necropsy, but an interesting fact placed in evidence by Patel is that thyroid grafts never produce the phenomena of hyperthyroidization, but rather to a kind of general cachexia.

The rare instances of this disease in which either medical or surgical treatment has been resorted to would seem hardly to encourage active therapeutics. Jäger tried thyroid opotherapy without success, while Feurer undertook the removal of a metastatic focus of the skull and was obliged to penetrate into the cerebral lobe on account of the extension of the secondary deposit into the brain substance. As to surgical interference undertaken in other regions than the cranium, it would appear that the patients derived little benefit from them.

ECHOES AND NEWS.

NEW YORK.

Sloane Maternity Hospital Appointments.—Dr. Ralph Waldo Lobenstine has resigned from the position of Resident Obstetrician at the Sloane Maternity Hospital. His resignation takes effect the first of September. He has held the position for the last two years and leaves in order to do private work in obstetrics and gynecology. Dr. Lobenstine's successor will be Dr. George Ryder, ex-House Gynecologist at the Roosevelt Hospital.

Experimental Surgery at Columbia.—Dr. J. W. Draper Maury has received a grant of $400 from the Rockefeller Institute for Medical Research. He will conduct experimental work in the subject of Tetany at the Surgical Laboratory of Columbia University next winter.

French Hospital.—The new French hospital on Thirty-fourth Street will be formally opened during the first part of October. It will be twice the size of the present building and will require an increase in the house staff. This has been provided for in the appointment of Doctors C. W. Walser, Henry A. Craige and Wm. Lamb.

Obstetrics at Dartmouth.—Dr. J. O. Polak, of Brooklyn, has been appointed to the Chair of Obstetrics in Dartmouth Medical College made vacant by the death of Prof. W. H. Parish, of Philadelphia.

Coroners' Physicians.—The Board of Coroners met in monthly session last week to consider the apportionment of the work of the coroners' physicians, a rearrangement being necessary owing to the transfer of Dr. Higgins to the position of police surgeon. At the close of the meeting, Coroner Scholer said there was no eligible list from which another physician could be selected. President McCooey, of the Municipal Civil Service Commission, says, however, that the board is prepared to furnish an eligible list of police surgeons from which a coroners' physician may be selected. The Board of Coroners object to this list, saying it is four years old, and claiming that the eligibles may not be pathologists. Referring to the matter, Coroner Goldenkranz said: "Coroners' physicians deal with medical and surgical cases, like the police surgeons, but in addition the coroners' physicians must be learned in the science of discovering abnormal conditions that exist in bodies after death, matters which police surgeons are not called upon to know."

PHILADELPHIA.

Bequests to Hospitals.—Many of the hospitals of the city received bequests of $5,000 to $10,000 from the estate of John L. Devereux, who left $141,000 to charity.

Physical Tests for Teachers.—The Board of Education has passed a by-law requiring all persons seeking positions as teachers in the public schools to undergo a physicial examination. Applicants for admission to the Normal School or the School of Pedagogy must also pass such an examination.

Meat Dealer Fined.—One of the eleven firms charged by Food Commissioner Warren with selling meat preserved with sulphites and other similar substances has been fined $50 and costs; the others have been held for trial.

University of Pennsylvania.—At the one hundred and forty-eighth annual commencement held June 15, degrees were conferred up 650 graduates. Of these, 96 were in medicine, 120 in dental surgery, and 28 in veterinary surgery. The honorary degree of Doctor of Science was conferred upon Drs. George Dock, of the University of Michigan, and Russell H. Chittenden, of Yale; Doctor of Laws on Drs. H. C. Wood, of the University, and H. P. Bowditch, of Harvard, and Sir Frederick Treves, of London.

Jefferson Hospital.—Dr. L. H. McKinnie has been appointed Chief Resident Physician. Dr. W. F. Manges has been made Skiagraphist to the hospital. Changes in the plans of the new hospital have necessitated the removal of parts of the framework erected

last year. When this is done the building will be pushed to completion.

Children's Homeopathic Hospital.—The new wing containing 58 beds has been opened, increasing the capacity of the institution to 130 patients. A recent improvement is an isolation ward where mildly infectious cases can be treated.

Special Lectures for the County Medical Society.—At the meeting of May 25, Dr. J. Madison Taylor read a paper on this subject in which he expressed the doubt that one-half of the members of the Society gather much assimilable knowledge from the ordinary journal article or paper read before the Society. They are not primarily designed to instruct though they may contain admirable facts, formulations and conclusions. They are written for publication and lack the simplicity and directness needed for purposes of instruction. To overcome these disadvantages, Dr. Taylor recommended the establishment of a course of postgraduate lectures by the Society for its own members. Publication in the transactions is not a part of the idea, this giving the speaker more freedom in his explanations and illustrations. The presence of the Secretary of the Society would not be needed at these meetings; discussion on the lectures should not be allowed, neither their publication in the daily papers. Acting on this suggestion, the directors of the Society have recommended a resolution setting apart the third Wednesday evenings of November and December of the present year for lectures on subjects of practical interest.

CHICAGO.

Hospital Dedicated.—The addition to St. Francis' Hospital, Freeport, Illinois, erected at a cost of $47,000, was dedicated June 8.

Appointment of Dr. Dugan.—Dr. Richard D. Dugan has been appointed President of the Illinois Board of Health.

Degree Conferred on Dr. Quine.—At the commencement exercises of the University of Illinois, June 8, the degree of Doctor of Laws was conferred on Dr. Wm. E. Quine.

CANADA.

Perpetuating a Medical Charter.—An interesting ceremony took place one day last week in Toronto when, in accordance with an Act passed at the recent session of the Ontario Legislature authorizing the Government to purchase the building of the old Toronto School of Medicine, the charter was surrendered and perpetuated. An order in council was put through taking over the building at the price of $12,000 as well as the charter of the school. There can now be no revival of that school as a rival to the University. The old Toronto School of Medicine was established in 1851 and incorporated by special Act of the Ontario Legislature, the charter being granted to Dr. John Rolph, Dr. Joseph Workman, Dr. W. T. Aikins, Dr. James L. Gavin, Dr. Russell and Dr. T. D. Morrison. The corporation at the time of its merger was as follows: Dr. James H. Richardson, Dr. Uzziel Ogden, Dr. James Thorburn, Dr. W. W. Ogden, Dr. Moses Aikins, Dr. R. A. Reeve and Dr. William Oldright. Although all of these latter are alive, only the two latter, Dr. Reeve, who is Dean of the Medical Faculty, and Dr. Oldright, who is professor of Hygiene, are in active teaching. The nominal members of the corporation now are: The Hon. Richard Harcourt, Minister of Education; Mr. J. R. Cartwright, K.C., deputy attorney-general; Mr. John Millar, Deputy Minister of Education; Mr. Thomas Mulvey, K.C., Deputy Provincial Secretary, and Dr. C. A. Hodgetts, Secretary of the Provincial Board of Health. The charter of Trinity Medical College was surrendered to Trinity University over a year ago, and in the federation was absorbed by the University of Toronto.

Help for Consumptive Poor.—During the past week there was held in Toronto a meeting of the Executive Committee of the National Sanitarium Association. A check was received from the Hamilton Branch of the Association for $3,000, a contribution from the people of Hamilton and county of Wentworth toward the support of the consumptive poor of those municipalities, at the Muskoka Free Hospital for Consumptives. A pavilion with accommodation for ten patients has been set aside to be known as the "Hamilton and Wentworth County Pavilion," which will be for male patients alone, the female patients being cared for in a ward in the main building. Word was received also that a branch had been successfully established at Ottawa and that some $2,000 had been subscribed, and special accommodation is to be set aside for patients from Ottawa. The Manufacturer's Life Assurance Company also contributed a sum of $500 toward endowing two beds for one year.

Ontario Medical Association.—The twenty-fourth annual meeting of the Ontario Medical Association opened in the Toronto University Building, Toronto, on June 14, and continued in session for the two following days. Dr. James F. W. Ross, the President of the Association, occupied the chair, while Dr. Chas. P. Lusk, Toronto, acted as General Secretary. There was a large attendance of physicians from different parts of the Province, and the meeting was one of the most successful in the history of the Association. The program was a very attractive one, each paper eliciting keen discussions. Among these was one by Dr. H. P. H. Galloway, of Toronto, giving the report of a case of bilateral congenital dislocations of the hips treated by the Lorenz bloodless method, together with a brief review of the status of the Lorenz method. Dr. Ross delivered the annual presidential address. Some of the matters referred to in his address were as follows: "The regular who adopted the methods of the quack was more dangerous than the quack himself; some surgical procedures of the present day require severe criticism; surgeons may be too conservative or not conservative enough; a few years ago we had an epidemic of the former and now we are suffering from a plague of the latter. Referring to the registration of births and deaths and notifying of infectious diseases, they were in doing this work assisting and defending the commonwealth, and the commonwealth should pay for it accordingly. He advocated the establishment by the Association of a special committee to deal with these matters as well as that of commissions to report at the next annual meeting. A symposium on life assurance was the feature of the meeting and occupied the whole morning session of the second day. This was contributed to by well-known medical men in the profession in Ontario, most of whom were connected with life assurance companies as medical directors. The discussion which followed was an animated one and it was quite apparent that the general consensus of opinion was that the fees for examinations were not commensurate with the work performed. One speaker mentioned the fact that in Toronto examinations were done for one company at the rate of 25 cents each, an announcement which elicited nothing but disgust.

At the annual Association luncheon, the Premier of the Province of Ontario was present and delivered an address in which he foreshadowed Government aid to a hospital which is now being considered in connection with the Medical Department of the University. The following were the officers elected for the ensuing year: President, Dr. William Burt, Paris, Ont.; First Vice-President, Dr. John L. Davison, Toronto; Second, Dr. George Hodge, London; Third, Dr. Edward Ryan, Kingston; Fourth, Dr. T. H. Middleboro, Owen Sound; General Secretary, Dr. Chas. P. Lusk, Toronto; Assistant Secretary, Dr. Samuel Johnston, Toronto; Treasurer, Dr. Fred. Fenton, Toronto.

GENERAL.

Association of American Medical Colleges.—The fifteenth annual meeting of the association was held in Atlantic City, N. J., June 6, 1904. Fifty-two colleges were represented. Four colleges applied for membership and were accepted. The application of one college was not acted upon, pending further investigation. The total membership of the association is seventy colleges. The association acted favorably on the recommendation of the Special Committee to continue the visitation and inspection of all the colleges that are members, and the following committees were appointed to report at the next meeting: Committee on Uniform Curriculum: Geo. M. Kober, W. J. Means and Parks Ritchie. Committee on Medical Education: Fred. C. Zapffe. This committee to confer with similar committees from the American Medical Association, Southern Medical College Association, American Confederation of Reciprocating Examining and Licensing Medical Boards, The National Confederation of Licensing and Examining Boards, The American Institute of Homeopatny, The National Association of Eclectic Physicians and Surgeons, and the Association of Physio-medical Physicians and Surgeons. This committee is to consider the question of medical education in all its phases, including preliminary education and entrance requirements. Papers were read by Wm. H. Wathen, Louisville; H. L. Taylor, Albany, N. Y.; Geo. M. Kober and Seneca Egbert, Philadelphia. The following officers were elected for the ensuing year: President, Samuel C. James, Kansas City, Mo.; First Vice-President, R. Dorsey Coale, Washington, D. C.; Second Vice-President, R. H. Whitehead, Chapel Hills, N. C.; Secretary-Treasurer, Fred. C. Zapffe, 1764 Lexington Street, Chicago; Judicial Council, Wm. J. Means, Columbus, Chairma; Randolph Winslow, Baltimore; H. B. Ward, Lincoln, Neb.; Geo. M. Kober, Washington, D. C.; Thos. H. Hawkins, Denver, Colo.; Parks Ritchie, St. Paul, Minn.; John M. Dodson, Chicago. Time and place of next meeting, June 5, 1905, Portland, Ore.

American Gastro-enterological Association.—This Association held its annual meeting at Atlantic City, June 6 and 7. A symposium on Gastric Ulcer was the chief topic of the proceedings. Harlow Brooks, of New York, discussed the pathologic anatomy, and W. G. MacCallum, of Baltimore, the pathogenesis. Campbell Howard (from Osler's clinic) analyzed the postmortem and clinical statistics of many hospitals in the United States and Canada. Symptomatology, course, complications, sequelæ and differential diagnosis were discussed by M. Einhorn, J. Kaufmann, M. Manges, all from New York, and H. W. Bettmann, Cincinnati. Medical and surgical treatment were discussed by S. W. Lambert and J. A. Blake, both of New York; the condition of the blood and urine was discussed by T. Futcher, of Baltimore, and the occurrence of gastric ulcer in children by E. G. Cutler, Boston. Other papers were read by J. C. Hemmeter, J. Friedenwald, both of Baltimore, C. D. Aaron, of Detroit, F. H. Murdoch, of Pittsburg, and F. B. Turck, of Chicago. The following officers were elected for the coming year: President, S. J. Meltzer, of New York; First Vice-President, F. H. Murdoch, Pittsburg; Second Vice-President, H. W. Bettmann, of Cincinnati; Secretary, C. D. Aaron, Detroit; and on the Council, W. G. Morgan, of Washington. The next meeting will take place in New York during the Easter vacation.

Tulane University.—By the will of the late A. C. Hutchinson of New Orleans, Tulane University of that city will receive cash and personal property worth nearly $800,000 as an addition to its endowment.

Inter-State Indorsement vs. Inter-State Reciprocity in Medical Licenses.—The following resolutions were introduced by Dr. E. L. B. Godfrey, secretary State Board of Medical Examiners of New Jersey, at the meeting of the Confederation of State Medical Examining and Licensing Boards, Atlantic City, N. J., June 6, 1904:

WHEREAS, national legislation cannot affect the question of State jurisdiction in medical practice without the surrender of definite State sovereignty, and

Whereas, State medical examination is the basis for State medical license, or the indorsement of a license issued after an approved examination of another State, and each State is the judge of the qualifications of its medical licentiates, and

Whereas, it is manifestly unjust and a cause of open complaint by the profession to compel an experienced physician, licensed after State examination, to undergo a second examination (practically a re-examination in the same elementary branches) upon removing from one State to another, when the requirements for medical license in the two States are substantially the same, or lower in the State from which indorsement is asked; therefore

RESOLVED: That it is the sense of this Confederation that, among those States whose standards of requirements are equal or substantially the same, their licentiates by examination who can meet the moral, academic, medical and examining requirements of the State whose indorsement is asked, are entitled to and should be indorsed, irrespective of reciprocity.

Resolved: That when the standard of requirements of any two States are unequal, it is in the interest of the profession that the State having the lower requirements should indorse the examined licentiates of the State having the higher requirements, irrespective of reciprocity, when such candidates can meet every legal and educational requirement of the indorsing State.

Resolved: That reciprocity limited by statute to reciprocating States, which demands equal rights and privileges in return as conditions of indorsement, with the purpose of compelling recognition of its own licentiates, is detrimental to and retards the progress of the profession, because: (1) It restricts the extension of indorsement by its limitations. (2) It causes hardship to the profession because of its uncertain tenure. (3) It excludes indorsement from States having higher requirements by reason of which reciprocity cannot be effected. (4) It refuses recognition to distinguished physicians of non-reciprocating States. (5) It recognizes neither the merit of a State examination nor that of the licentiate as compared with reciprocity. (6) It tends to maintain standards at the level of the lowest reciprocating State, and offers no inducement for a State to raise its

standards above those of its reciprocating neighbors. (7) It practically involves an omnibus indorsement, without inquiry as to the status of the individual candidate, and without discrimination, since all licentiates of a State stand legally upon an equal footing. (8) It is impractical for adoption by any considerable number of States, because of the difference in State laws, standards and population.

Resolved: That reciprocity based upon a voluntary agreement of State boards is, like statutory reciprocity, impractical, because: (1) There is no uniformity in State laws and no ability to enforce them. (2) When differences arise between Examining Boards, in respect to the status of colleges, the grade of examinations or the eligibility of candidates rejected by one Board for examination by another, there is no law, national, interstate, or state, to adjust the differences or to enforce the agreement which may be broken at the pleasure of either Board and without redress.

Resolved: That inter-state indorsement, authorized by statute and exercised at the discretion of a State Medical Licensing Board, irrespective of reciprocity, based upon the substantial equality of educational requirements, upon a State examination satisfactory and approved as to kind and grade, and upon the individual merit and the professional qualification of the candidate for indorsement, is far better than indorsement based upon either statutory or voluntary reciprocity, and tends more than either to further the cause of higher medical education and the autonomy of the profession throughout the country. (1) It is good State policy since it neither denies citizenship nor the right to practice to any physician entitled through merit to its privileges. (2) It makes the State the sole judge of the qualifications of its licentiates by enforcing the same requirements for indorsement as for examination for license, thus placing all licentiates on the same footing. (3) It accepts a State examination for what it represents as an examination, but not as more important than the merits and qualifications of the candidates for indorsement. (4) It tends to raise and maintain a high standard of education by making a license from a State with high requirements more widely acceptable for indorsement than one from a State of low requirements, and thus admits of early national application. (5) It requires legal evidence of individual merit as well as professional qualifications for approval for indorsement, and thus tends to reduce to a minimum the indorsement of irregular, itinerant practitioners. (6) It puts a premium on character and education and renders the best practitioners eligible for indorsement in every State. (7) It indorses both the State and the individual candidate, and failure of a State to reciprocate, therefore, does not afford either a legal or valid reason for rejecting any of its licentiates who can meet every requirement of the statute. (8) It may accept any of the examined licentiates of a State for indorsement, or only those examined and licensed under the most recent requirements.

Resolved: That a State that will not indorse the examined licentiate of another State where the standards are co-equal, or of a State where the standards are higher, stands as a hindrance to medical progress, because: (1) It does not recognize the efficiency once proved by examination in a State of co-equal or higher requirements. (2) It limits the working sphere of the profession. (3) It exacts the same requirements for license from the physician, duly licensed after an examination in a co-equal State and experienced by years of practice, that are exacted from the inexperienced graduate.

Resolved: That indorsement, therefore, irrespective of reciprocity, should be granted to examined licentiates of States whose standards of requirements are co-equal or higher, when the candidate for indorsement can meet in all respects the requirements of the statute governing the practice of medicine.

After discussion, the resolutions were ordered to lie on the table, to be printed by the Secretary, distributed among the members and presented for consideration at the next meeting.

OBITUARY.

Dr. D. J. Treacy, one of the best known practitioners in the southern section of Philadelphia, was found dead in bed on June 20. Heart disease, from which he had suffered for some years, was the cause of death. Dr. Treacy was born in Ireland but came to this country in boyhood. He was sixty years of age. He graduated at Jefferson in 1867.

Dr. James Simpson, sixty-five years old, and a practising physician on Pine Street, Philadelphia, for a quarter of a century, died June 20 from an illness beginning in March; an operation three weeks ago failed to improve his condition. During the Civil War he was appointed a surgeon and had charge of the hospital corps at Alexandria the entire time, although he had not yet finished the course at Jefferson.

Dr. Nathan Smith Davis, Sr., died at his home in Chicago, Ill., Thursday, June 16. He was eighty-eight years old. He was born Jan. 19, 1817. He was one of the founders of the American Medical Association; also one of the founders of Northwestern University, the Chicago Academy of Sciences, the Chicago Historical Society, the Illinois State Microscopical Society, the Union College of Law, and the Washingtonian Home for Inebriates. His fame as a physician was by no means confined to the boundaries of Illinois, for he bore an exalted reputation in his profession throughout the entire country. In 1855 he became editor of the *Chicago Medical Journal.* In January of 1860 he started a new magazine, and called it the *Chicago Medical Examiner,* which he continued as an independent journal until 1873, when both publications were merged under the title of the *Chicago Medical Journal and Examiner.* In 1883 he was chosen editor of the *Journal of the American Medical Association.* The most important of Dr. Davis' writings is said to be a text-book on agricultural chemistry, used in district and public schools. He was also the author of a history of medical education and institutions in the United States from the settlement of the British Provinces to 1850. He was a frequent contributor to the current periodical medical literature.

Dr. James H. Dunn, of Minneapolis, Minn., after reading a paper before the American Surgical Society at St. Louis dropped dead in his room June 16. He was forty-eight years old.

SOCIETY PROCEEDINGS.

THE AMERICAN MEDICAL ASSOCIATION.

Fifty-fifth Annual Meeting, held at Atlantic City, N. J., June 7 to 10, 1904.

SECTION ON MEDICINE.

Third Day—June 9th (*Continued*).

(Continued from Page 1189.)

Microbic Infection.—The discussion was opened by Dr. Anders, of Philadelphia, who said that while microbes are a necessary element in the causation of gallstones an additional factor is required. Local congestion in the biliary tract and the inspissation of bile, with consequent lack of drainage invite infection. It is important then that the gastro-intestinal tract should be

kept in the best possible condition so as to avoid these local disturbances in the biliary tract. The part of the medical man is as far as possible to prevent the formation of gall-stones and remove the causative conditions. It is interesting to have Dr. Sippy say that medical measures, rest and diet may overcome the tendency to contraction of the pylorus which sometimes occurs in connection with gall-stones and which makes the patient so unsuitable for the serious operation. In this matter of preparation for the operation, the medical man can be of great use to the surgeon. In Dr. Anders' experience, just before the occurrence of true gall-stone colic, there is pain referred to the tenth dorsal vertebra. This pain is not found in cholecystitis. The latter is accompanied rather by a sense of vague discomfort than the boring pain referred to the lower dorsal space. Early diagnosis is important, between these conditions, for while cholecystitis is a medical affection, cholelithiasis must not be given over to the surgeon.

Gall-stone a Foreign Body.—Dr. William M. Mayo, of Rochester, Minn., said that the touchstone of cholelithiasis as a surgical condition is the fact that a gall-stone is a foreign body and must be considered as such. Whenever it gives trouble it should be removed. Many gall-stones slumber for long periods, even for a lifetime, but, as a rule, once they awaken they do not slumber again. At the present time the mortality from operation for gall-stones in uncomplicated cases is not more than three per cent. Even this is largely accidental. Operation is not much more dangerous than for appendicitis in the interval. The trouble is that cases go too far before being referred to the surgeon. It is proper for the physician to state deliberately to the patient how much of added danger delay will bring. The mortality in complicated cases is 16 per cent. in the most experienced hands. If this is explained to patients, there will be less likelihood of their putting off the operation too long.

Benefits of Operation.—After the removal of gall-stones other chronic conditions in the gastro-intestinal tract, and especially in the pancreas, subside. The chronic inflammation of the pancreas, which may become serious, disappears on proper drainage of the biliary tract. Dr. Mayo has found on several occasions that the blocking of the duct of the pancreas has led to an enlargement of the head of the pancreas behind which the common duct became hidden. After drainage of the gall-bladder this became reduced in size and revealed the presence of a stone that had been hidden behind it.

Bile and Pancreatic Fluid.—Dr. William S. Thayer said that he had had the opportunity to read Dr. Opie's paper and that in Dr. Opie's absence he wished to discuss some of the points that would have been presented. Dr. Pavlov, of St. Petersburg, has shown that bile increases the fat-splitting power of the pancreatic juice three to four fold. It does this for all the ferments, but especially for the fat-splitting ferments. Hence, very probably, the reason why the entrance of bile into the pancreatic duct gives rise to acute pancreatitis. Dr. Opie has shown that the existence of even a small stone in the papilla of the common bile duct may lead to the passage of bile into the pancreas. As both the pancreatic and biliary ducts empty through this orifice this is not difficult to understand and he has demonstrated biliary staining of the pancreatic ducts. Gall-stones then are associated with pancreatitis, probably in a causative relation. It has been found that a fat-splitting ferment may be found in the urine whenever there is disturbance of the pancreas. This has been demonstrated on dogs in whom bile was injected into the pancreas. This will probably prove of service in the diagnosis of pancreatic conditions. Whenever at abdominal operations, spots of fat necrosis are found on the peritoneum all gall-stones should be removed. They are probably the cause. Such conditions may develop without extensive pancreatitis and the prognosis is by no means fatal. These small stones, which give rise to such conditions, may or may not cause jaundice, though usually this symptom is present.

Gall-bladder Pain.—This may occur either before or after the taking of food, usually on an empty stomach but, at times, just after taking food, simulating gastric ulcer. Emaciation in connection with gall-stones is usually due to adhesions of the pylorus. These may lead to dilatation of the stomach and the largest dilatations Dr. Thayer has ever seen were due to this cause. In a case seen recently, on the other hand, the pain felt was in the median line and bore no relation to food and there was large dilatation of the stomach. Only a slight superacidity was present, and it was concluded that the condition was due to gall-stones. At operation two ulcers of the stomach, causing blocking of the pylorus, were found.

Early Operation.—Dr. Thayer said that the important matter must be to insist on having early operation for gall-stones. If surgical intervention is delayed it may be found that coagulation time of the blood has increased very much, even up to twelve or fifteen minutes, and as a consequence, after operation the patient bleeds to death in old cases of gall-stones; this is one of the most serious possibilities that have to be faced.

Intrahepatic Stones.—Dr. J. C. Hemmeter, of Baltimore, said that in a recent case under observation, the patient, the wife of a physician, had suffered from typical symptoms of gall-stones and a resection of the gall-bladder was done. A number of stones were found and removed. After the operation, however, the symptoms redeveloped and a second operation had to be done, when three stones were found in the gall-ducts within the liver. This emphasizes the necessity for careful searching for gall-stones in these cases in order to avoid the necessity of a repetition of the operation.

Gall-stones and Metabolism.—Dr. Hemmeter considers that certain disturbances of metabolism are constantly associated with the formation of gall-stones. Overeating, and especially the overconsumption of fats, is one source of this metabolic disturbance. In those who have given any signs of discomfort in the biliary region it may be important to try to do away with gastro-intestinal disturbances of every kind. The differential diagnosis of gastric ulcer and gall-stones remains a very difficult matter. It must be remembered, however, that in gastric ulcer a peptic ferment occurs in the urine and the finding of this may be one element in the diagnosis. On the other hand, orthoform will prevent the pain of ulcer if administered before the giving of food and will stop the pain after it has begun by its local action upon the tissues. Orthoform will not, of course, affect cholelithiasis.

Cholelithiasis, Surgical not Medical.—Dr. Frank Billings, of Chicago, said that there is no medicine and no system of remedial measures that will dissolve a gall-stone once formed. As has been said, a gall-stone is a foreign body, and if it is giving symptoms, should be removed. Drainage of the gall-bladder by preventing the progress of infection may save recurrence of painful conditions. Internal drainage by means of cathartics, may accomplish this same purpose. Hence the benefit derived by the treatment at Carlsbad. Once the gall-bladder has become infected, however, the case should be handed over to the surgeon. A single attack of gall-stone colic is not enough to justify this, but if attacks have been repeated, especially at brief intervals,

then there seems no hope of relief by the passage of stones.

Toxin and Pressure.—Dr. Wilson said, in closing the discussion, that some of the cases are overwhelmingly toxic, due to pressure. All the cases in which he has seen lumbar puncture followed by the exit of bloody fluid from the spinal cord have been unfavorable. On the other hand, when the fluid is clear the prognosis is favorable. This is the experience also of Dr. Riessman, who has had three fatal cases in which bloody fluid was present. With regard to failures to obtain fluid on lumbar puncture, Dr. Wilson considers that too short a needle is generally responsible for this. A four-inch needle is sometimes recommended. Dr. Wilson has used a five-inch trocar and canula and never fails to get in or to get fluid.

Amebic Dysentery.—Dr. James P. Tuttle, of New York, said that when the Shiga bacillus was discovered it was considered that most cases of dysentery were due to this. The *Amœba coli*, however, had been previously shown to occur in certain cases. Now, it is known that there is a third type due neither to the ameba nor to Shiga's bacillus, nor so far as is known to any specific microorganism. Dr. Tuttle has had the opportunity to study 74 cases of amebic dysentery in which motile amebæ were found in the stools or the scrapings of the ulcers. In these cases the symptoms disappeared with the ameba and recurred when it could be found again. The source of the ameba is not known. It differs from the fresh water ameba by its susceptibility to changes of temperature. Fresh water amebæ are motile at high and low temperatures. Dysenteric amebæ are killed by a reduction of temperature. The size is not enough for the diagnosis. It used to be considered that these microorganisms increased by division. Now it is thought that they increase rather by sporulation.

Low Temperatures Unfavorable.—The life of the ameba at human temperature seems to be indefinite. Whenever the temperature is reduced to 70 degrees, however, the motility of the organism disappears and does not reawaken. Cold is much more effective than any chemical agent in producing death. In order to examine the stools for ameba, the feces must be obtained warm. They must also be examined upon a warm slide. One of the easiest ways to find them is from the scrapings from ulcers as obtained through a proctoscope.

Dr. Tuttle has found them in long-standing mucous colitis with constipation rather than diarrhea. In a patient now under observation mucous colitis has continued for four years, without any thought of a possible connection with the ameba. Yet these organisms have now been found. It is often said that the ameba has its home principally in the tropics. But they seem to occur almost anywhere. Three of Dr. Tuttle's patients have never been out of Greater New York. Cases are known where patients always lived in New England, or even in Canada.

Ulcerative Lesions.—The ulcers due to the *Amœba coli* are said by Roger and Futcher to occur particularly in the caput coli. Dr. Tuttle has always found them, however, in the rectum and the sphygmoid. Where ulcers occur higher up, the cases are more obstinate to treatment. The amebæ do not occur on the surface of the ulcers but in the submucosa. Here no chemical antiseptic can reach them, hence it is hopeless to expect a cure by means of quinine or other injections. The amebæ will not, however, live at a temperature below 65 degrees. Dr. Tuttle has found that the best treatment is by large injections of ice water. The rectum is flushed with ice water with the patient in the knee-chest position and as much water as possible retained.

Surgical Treatment.—In obstinate cases where the disappearance of ulcers in the rectum and sphygmoid is not followed by relief of symptoms and where there is tenderness over the caput coli, Dr. Tuttle suggests the usual incision for appendicitis, the stitching of the appendix into the wound and then, after adhesions had formed, the cutting off of the appendix. Through the opening into the bowels thus afforded cold water is injected by means of a catheter and the affection is relieved. The patient, as a rule, is around in ten days and suffers no inconvenience. Dr. Tuttle exhibited a physician who had been thus treated and who has been cured of an amebic dysentery which had existed four years.

Simulation of Gastric Disease.—Dr. Allen Jones, of Buffalo, said that patients with latent gall-bladder disease, frequently suffer from stomach symptoms. While the characteristic colic occurs usually on an empty stomach, it is not unusual for patients with gall-stones to have discomfort after eating. As the result patients frequently think that they have stomach disease, but chemical examination shows normal secretion and motility. In these cases, however, suspicion with regard to the possibility of gall-bladder disease should be aroused and then sometimes further confirmatory symptoms will be obtained.

Non-surgical Gall-bladder Disease.—Dr. James C. Wilson, of Philadelphia, said that there are two classes of patients suffering from gall-stones who must not be considered surgical. In the first class there is permanent latency of the disease except for vague discomfort, which does not advance beyond this. In the other, after a typical seizure, or even two, of gall-stone colic, a stone is passed and then there are no further symptoms. These are the cases that make physicians hesitate as to the recommendation of surgical intervention. They are, however, very rare and should not be allowed to count for much in the formation of the physician's opinion. It is from these cases too that the traditions with regard to supposed therapeutic efficacy of small doses of chloroform or of large doses of olive oil are derived. Gall-stone disease, however, in the great majority of cases is a surgical and not a medical affection, and exceptions only serve to illustrate the rule.

Ergot in General Practice.—Dr. Alfred T. Livingstone, of Jamestown, N. Y., said that ergot has unfortunately been used only in one branch of medicine while undoubtedly the drug has applications in many. He has found it of great service in a number of affections. Wherever there is passive congestion with relaxed unstriped muscular tissue, ergot gives tone and thus affords relief of many symptoms. Not infrequently paresis of the vasomotor nervous system can be relieved by this means. As a rule, the conditions which develop as a consequence of lack of tone in the nervous system are treated by means of stimulants. These do good only for the moment, but eventually always do harm. Strychnine, digitalis and alcohol are unreliable and after a time patients become accustomed to them. In some cases overstimulation may even prove fatal. Stimulation of the heart for instance, inevitably increases weakness, but does not overcome it.

Equilibrium of Circulation.—What ergot especially effects is an equilibrium of the circulation. When the heart is laboring and the unstriped muscular fibers in the blood vessels are relaxed there is no proper response to the heart's work in the elasticity of the arteries. As a consequence circulatory conditions become worse and worse. On the other hand, when the heart is doing excessive work and there is high tension in the arteries, ergot will correct this and bring about circulatory equilibrium much better than can be accomplished by

depressant drugs. In recent years it has come to be realized that shock is a vasomotor paresis of the abdominal blood vessels. It is in this region of the body especially that ergot can be depended upon to give tone to the vessels. It would seem then to be the peculiar province of this drug to correct conditions that lead to shock and collapse. Dr. Livingston's attention to the value of ergot was first called by the benefit derived from its use in insanity. In all forms of functional nervous disease, however, it has a definite value. Pain is usually the result of pressure upon nerves and this pressure is due oftenest to a congestion consequent upon loss of tone in the blood vessels. In these cases ergot often does good. In neuritis, in certain forms of neuralgia, in many cases of angina pectoris and even in such conditions as intestinal colic ergot may be of distinct service. In the nervous symptoms due to alcoholism or to drug addictions no other remedy is so helpful. Morphine may be cut off at once and yet no evil results follow. While ergot is not a narcotic it serves to promote sleep by maintaining a certain anemia of the brain after the intense hyperemia consequent upon drug or alcoholic excesses.

Illustrative Case.—A physician recently under Dr. Livingston's care had been taking two drams of morphine a day and two drams of cocaine a week. As the result of the hypodermic injection of two drams of ergot, he slept quietly for forty-two hours, being awakened at intervals in order to be given liquid food and drink, but dropping off to sleep again at once. No collapse followed, though no further morphine was allowed and no cocaine or any substitute employed. No other hypnotic was thought of and the result has been a complete cure of the case.

Paretic Convulsions.—Dr. Stranahan, of New York, said that ergot is a popular drug in insane institutions and has become the standard remedy for cases of paretic convulsions. At first chloral and ergot were given in combination by the rectum, but ergot alone is really better. Nothing will control these convulsions like this drug. In general practice Dr. Stranahan has found ergot very useful especially in the congestive stage of pneumonias. Sometimes it seems even to abort the disease. In a case recently seen the temperature was above 106° F. and the pulse 135 and the patient delirious. After the injection of two fluid drams of ergot, repeated once at the end of two hours, the temperature fell to 103° F. and the delirium disappeared. In spite of the alarming beginning the pneumonia did not run a severe course.

Postanesthetic Nausea.—Dr. Basch, of New York, has found ergot of good service in reducing the nausea which occurs after anesthesia. The drug is given for several days beforehand and contributes not a little to calm the patient. After its use even when there has been decided manipulation of the inestines, very little shock is noticed. The racking headache so common after anesthesia is very much lessened by its use. There is a popular impression, according to which patients dread the anesthetic more than the operation itself. This is due to the unpleasant after-effects, and these can be greatly lessened by means of ergot, thus encouraging patients to undergo operations for which they would otherwise be unwilling.

Neurotic Conditions.—Dr. James J. Walsh, of New York, said that his own experience with ergot is limited to seeing its effects upon delirious alcoholics, where it undoubtedly is of great service. Dr. Homer Wakefield, of New York, however, who has seen good effects from it in many neurotic conditions, but who is unable to be present at the meeting asks that his opinion of its value for such affections be stated. In the neurasthenic conditions, which are responsible for the tired feeling and which are probably due to relaxed conditions of the abdominal blood vessels with consequent sluggish circulation, ergot is the best remedy and is much better than any of the stimulants that are ordinarily employed. Dr. Wakefield has also found ergot of decided benefit in the treatment of heart disease with lost compensation especially in combination with the Schott method of treatment. He has found that dilated hearts may, after the use of ergot and the consequent lessening of resistance in the circulation, be demonstrated by the X-rays to be smaller in size.

Wet Brains.—Dr. Alexander Lambert, of New York, said that ergot is undoubtedly the best remedy for acute alcoholism that has yet been introduced. In the very severe cases of alcoholic delirium in which there is a tendency to edema of the brain, these cases being usually known as wet brain, no other remedy has been so effective. For the tremor of alcoholism ergot is a rapidly effective remedy. Recently when going on his service at Bellevue, Dr. Lambert found 16 patients who had to be tied in their beds. After the use of ergot all of them could be relased from their bandages and though they continued to mutter in delirium, they were comparatively quiet. Ergot is the only remedy which allows morphine to be taken away at once without inflicting great suffering upon the patient and without the danger of sudden death. Dr. Lambert has never seen a case of collapse after the sudden withdrawal of morphine when ergot was given.

Nauseating by the Mouth.—Dr. Livingston said that the action of ergot is uncertain when given by the mouth, since it often proves very offensive to the stomach and as a consequence of this is absorbed very slowly. When it is needed its action is wanted at once, therefore it is better to introduce the drug hypodermically, when its effect is certain and immediate.

Differential Leucocytosis.—Dr. William Krauss, of Memphis, Tenn., presented some studies in the differential leucocytosis of fevers which had been made with the idea of seeing how far this method could replace culture methods in districts where these cannot readily be obtained. The result is that for tentative diagnosis in the beginning of typhoid fever, or in malarial infection when the parasites are not found at first, a specific picture is obtained. In malaria without much fever, before quinine has been administered, the polynuclear leucocytes are much reduced in number and the large mononuclears are correspondingly increased in size. In cases where there is for any reason a large number of glands enlarged this will not be true. In malarial infection under quinine, the number of polynuclears rises to 80 per cent., though the large mononuclear leucocytes exceed in number the small mononuclears. Typhoid fever may give the same picture as malaria at the beginning, but while waiting for a Widal reaction, the giving of quinine would be justified, since the presence of malaria is much more likely. In gradually developing fever there is an absence of marked increase of large lymphocytes, or of polynuclears, which is characteristic of this type of fever. Accordingly, a suspicion of typhoid would be aroused and precautions could be taken against possible infection, even before a Widal was positive on the strength of this picture.

Uremia and Eclampsia.—Dr. Robert N. Willson, of Philadelphia, discussed the pathogenesis of these two conditions. In his experience pressure upon the cerebrum exerts a great part of the influence in producing symptoms. It is possible by the injection of large amounts of salt solution to produce the characteristic amaurosis and other symptoms of uremia even though there may be no poisonous products present. Not in-

frequently when pressure symptoms are relieved, the patient becomes better. The characteristic symptoms of headache, sleepiness, nausea, neuralgia, tinnitus, aphasia, bladder and intestinal incontinence may all result from pressure. In a case under Dr. Willson's care, suffering with the typical coma, incontinence of urine and a distinctly urinous breath, when a needle was introduced into the spinal canal, the spinal fluid spurted out. After the removal of 26 c.c., the patient became distinctly better. Characteristic Cheyne-Stokes breathing ceased, though it recurred later. Next morning after another 10 c.c. were removed there was another period of relief of symptoms. This came at a time when the patient's conjunctiva was absolutely unresponsive to touch. Other treatment usual in such cases as hot packs had simply made the patient worse and purgation and nitroglycerin failed of action. Only lumbar puncture did any good. At the autopsy in this case the ventricles of the brain were found greatly dilated and the arteries gaped when cut because of the pressure to which they had been subjected. Dr. Willson considers that while there is a toxic element in uremic convulsions many of the symptoms are due to intracranial pressure, and as this can be relieved readily a hint for treatment is thus given. German observers have found some relief from lumbar puncture but not much lasting benefit has been obtained. The problem of treatment is somewhat simplified, but on the other hand it is evident that the infusion of normal salt solution, as suggested by some, with the idea of diluting the toxins present is absolutely contraindicated, since this would increase blood pressure and since injections of normal salt solution in animals have been sufficient to produce uremic symptoms.

Reflex Elements.—Dr. James Tyson said that the causation of uremia has long been disputed. There seems no doubt that there are toxic elements in the etiology, though probably other factors enter. Dr. Willson's presentation of the factor of intracranial pressure seems to deserve special attention. Dr. Tyson has considered that eclampsia may to some extent be a reflex somewhat as convulsions in children; that is to say, in a condition of not firmly established equilibrium of the nervous system, the number of nerve impulses carried to the central nervous system sets up so much irritation as to cause a spontaneous explosion of nerve force.

Eclampsia and the Liver.—Dr. Alexander Lambert said that as the result of a number of recent observations eclampsia has come to be associated in his mind with lesions of the liver. Often the fatal cases have not gone to the extent of acute yellow atrophy, but they represent a beginning stage of disaffection. In hyperemesis gravidarum the same thing seems to be true and leucin and tyrosin are found in the urine just as in acute yellow atrophy. The lesions of the liver are extensive, but seem to be found in all the cases. There seems no doubt that the convulsions of uremia and eclampsia are due to hypertension, but what causes this?

Hot Water Treatment.—Dr. Fenton B. Turck, of Chicago, said that he found very hot water preferable to very cold water for the treatment of amebic dysentery. He had used cold water at first, but found that in weak patients and many of those suffering from amebic dysentery it caused collapse. He found 115° F. not enough to cause disappearance of the ameba. With care, however, he has been able to have his patients stand injections of 131° F. This, of course, cannot be borne at once, but patients have to become accustomed to the temperature. Water at 105° F. is allowed to run in at first, and then after a time at 110° F., and then at 115° F., until after a certain number of sittings patients can eventually stand up to as high as 130° F.

Dr. Tuttle, in closing the discussion, said that he treats ulcers in the rectum locally with antinosine. It must be remembered, however, that no drug will reach the germs in the submucosa. As regards the objection that has been made that the suggested operation upon the appendix with the leaving of an opening into the cecum is too serious a consideration for the treatment of amebic dysentery; it must not be forgotten that while an amebic dysentery lasts there is always danger of the occurrence of liver abscess and that once this development has occurred, the case invariably runs a fatal course. An operation which should have no mortality even though it does involve considerable discomfort and inconvenience is not too high a price for a patient to pay for freedom from so serious a danger.

Tuberculosis and the Family Physician.—Dr. S. A. Knopf, of New York, said that the solution of the serious problem of tuberculosis in large cities depends mainly upon the family physician. Unless he is able to recognize the affection early and to begin the proper treatment there is little hope in most cases of the tuberculosis being discovered before serious pathological conditions have developed in the lungs. Dr. Knopf believes in the old-fashioned idea of a family physician to whose care is entrusted the health of the family. A time will come doubtless when he will be asked to examine members of the family at regular intervals, even though there may be no special need for treatment. It is especially important that for health's sake there should be periodical examination of the chest of each member of the family. Dr. Knopf said that undoubtedly the family physician would do much to prevent the evils which now flow from the immense consumption of patent medicines in this country. Many of the cough remedies so frequently advertised, and which patients are prone to take contain morphine and other drugs, which seriously injure the appetite and are the worst possible agents for a consumptive to take. On the other hand, many of the tonic remedies widely advertised are scarcely more than combinations of whisky with certain bitter principles. Some of the best known of the tonics, the sarsaparillas and remedies for women's ills contain from 25 to 45 per cent. of alcohol. This has been shown by the investigations of the Massachusetts Board of Health. Dr. Knopf said that quacks and others succeeded in obtaining testimonials by the most questionable methods. The patient who has recently been under his observation, and who is suffering from tuberculosis in its last stages, said that twice deceived by the fact that the great Professor Koch's name seemed to be attached to it, he had been tempted to take the Koch lung cure. After the course of treatment had expired and she was not able to pay any more, the physicians attached to this institution offered to treat her for a longer period free of charge, provided she would sign a testimonial that she had been examined by three reputable physicians and found to be in the last stages of consumption and had been cured by Koch's methods.

Appendicitis and Influenza.—Dr. Marvel, of Atlantic City, showed by a series of statistics that appendicitis seems to bear a certain relationship to grip. Examination of hospital records in Philadelphia in recent years seems to show that at times when grip is raging with greater virulence, there are more cases of appendicitis. There is an intestinal influenza which apparently weakens the resistance of the appendix, hence the acute inflammatory disturbance which results. Winternitz has seen many cases of appendicitis which he considers due to the influenza bacillus. Lucas Championnière, the distinguished French surgeon, considers that the etiological relationship between the two diseases is very close in many cases. Surgeons generally

who have been in communication with Dr. Marvel, are much more inclined to consider that there is a relationship between the two diseases than are medical men.

Dr. De Lancey Rochester, of Buffalo, said that it is unlikely that there has been more real influenza during the past five years than during the preceding five years, though, of course, there has been more appendicitis, because of the better diagnosis and readier recognition of the disease. It is an interesting subject for observation, but as yet nothing can be said.

Dr. Robert Morris, of New York, said that he considers influenza to be a prominent predisposing cause of appendicitis because the presence of the bacillus of influenza in the intestinal tract causes the swelling of the mucosa of the appendix and this leads to lowered resistive vitality, during which bacteria easily find a nidus for growth.

FOURTH DAY—JUNE 10TH.

Aneurism of the Innominate Artery.—Dr. A. P. Francine, of Philadelphia, reported in detail six cases of aneurism of the innominate artery collected from the 3,309 autopsies at the Philadelphia Hospital with two additional cases from the Pennsylvania and Episcopal hospitals. Besides this he gave the details of 138 cases collected from the literature. Among the symptoms of innominate artery one of the most prominent is the weakness of the right radial pulse. As a matter of fact, however, the pulsation in all arteries on the right side is weaker than on the left and the carotid is usually noticeably weaker, while the weakness in the right temporal is apt to be more noticeable even than in the right radial. As the result of the tumor there is nearly always diminished resonance at the apex of the right lung and there is distinct tactile fremitus near this increased resonance. The tumor of innominate aneurism is nearly always superficial. In its growth it sometimes forces out and upward the clavicle. Dysphagia is less prominent with this form of aneurism than with aortic aneurism and a curious feature is that this symptom is apt to be more prominent at the beginning than it is later, when the innominate tumor forces itself past the clavicle. The larynx and trachea are, however, more compressed than with aortic aneurism and the voice is more interfered with. There is a regurgitant quality of the right radial pulse which has been noted as pathognomonic of innominate aneurism.

Pathology of Arthritis Deformans.—Dr. Thomas McCrae, of Baltimore, said that the term infectious arthritis would better be limited to arthritis due to a specific organism. There is apt to be confusion without this. Whether arthritis deformans is due to a specific organism or not, is not yet decided. The important question in pathology is whether there are two distinct diseases, one producing hypertrophy and the other atrophy, or whether these are only types of a single disease. The relationship of these diseases to acute articular rheumatism is extremely doubtful if it exists at all. There is the history of cases in which after an attack of acute rheumatism fifteen years before arthritis deformans developed. The majority of the pathological descriptions are those of late changes in the disease, and in order to decide many of the important questions the earlier changes must be studied. Not all cases of arthritis deformans go on to joint deformity. Some of them are mild and get entirely well or so nearly well as not to be a source of inconvenience or unsightliness. In most cases, however, there is either an atrophy or a hypertrophy of joint tissues. Goldthwaite, to whom is owed most of the knowledge of the disease here in America, says that either of these forms may occur at any age from two to seventy years. Most authorities are agreed that at first there is synovial inflammation, followed by atrophic changes and later complete disorganization of the joints. Hypertrophic changes involving mainly the bone may occur after this and some observers have seen this succession of events, but there is yet some doubt about it. The same histological changes are noted in the joints as in other forms of arthritis as those due to the gonococcus or to certain of the pus cocci, or even to the tubercle bacillus. Periarticular changes are usually quite marked.

Hypertrophic Changes.—Dr. Garrod, the distinguished English authority on arthritic conditions of various kinds, who has had the advantage in this matter of seeing and knowing the histories of cases observed also by his father, says that he has never seen a progression from the atrophic to the hypertrophic form. The predominant feature of many cases, however, is a bony overgrowth accompanied by eburnation and erosion of cartilages. In most cases there is partial or complete involvement of the spine, with hypertrophy between the vertebræ, but also the deposit of bone in the ligaments of the parts. These deposits are apt to be curiously irregular as may be seen by specimens preserved in the English museums. While this disease has been described under the name of spondylitis, the spine is seldom affected alone, but usually there is also some involvement of the shoulder and hip. The term monoarticular has been used but this seems unfortunate, for the disease is typically arthritis deformans and is very seldom entirely confined to one joint, though the symptoms may be very prominent in one large joint. In these cases it is particularly the hypertrophic type that is seen.

Still's Disease.—This is an affection which has been described by the English physician, Still, as occurring in children from the age of two to five years, with polyarthritis, polyadenitis and enlarged spleen. There seems no good reason, however, for separating this affection from the rest of the group of acute arthritis deformans. Affections resembling Still's disease, as it occurs in children and with the same typical features, are noted in young persons over fifteen years when they are always considered as examples of arthritis deformans. The multiplication of terms then is without good reason. In certain cases the hypertrophic and atrophic form may coexist. The hypertrophic form being seen especially in the spine, the atrophic in the peripheral joints. There is question whether the disease is due to disorder of the nervous system or whether it is a specific infection, or due to multiple infection. The symmetry of the disease, its occurrence at the periphery and progress toward the body and the trophic changes in joints resembling those in Charcot's disease or in syringomyelia, seems to point to some central nervous disturbance. As a matter of fact, however, the disease is not so symmetric as is said and does not necessarily begin in the small peripheral joints as it may affect the large joints. There is absence of evidence to any involvement of the central nervous system, except in a few cases in which the cells of the anterior horns of the spinal cord were injured.

Specific Infection.—Recently certain microbes have been discovered supposed to be specific for the disease. They were isolated from the case and their injection after culture was followed by hypertrophic osteoarthritis in the rabbit. It remains to be seen whether this work will be substantiated by others. The possibility of a combination of infections must be borne in mind. The gonococcus may produce lesions very similar to those of arthritis deformans. In the 170 cases seen at Johns Hopkins Hospital, heredity seemed to be a predisposing factor. This was not marked, but, as in cancer, the affection seems to run in families.

More males than females were under treatment at Johns Hopkins, but this is the only list of over 100 cases in which this is true.

History of Arthritis Deformans.—Dr. James J. Walsh, of New York, said that the disease, while only recently separated from rheumatism, is very old. Mummies have been found with the distinct pathological changes of the disease. Virchow found bones in a medieval graveyard with signs of the affection. Botticelli's model seems to have suffered from the disease, and as he followed the outlines of her fingers closely in painting them the result is, he is accused of painting ugly hands. The English museums are rich in specimens of arthritis deformans from the last hundred years—before the disease was acknowledged to be distinct. English observers, especially such conservative authorities as Garrod, Hale White, and Bannatyne, consider that there are three forms of arthritis deformans from the clinician's standpoint. The first is a chronic deforming affection which occurs particularly in the smaller joints and gradually involves more and more until considerable disability results. This occurs a little more frequently in old women than in old men and is not very distinctly separated from Heberden's nodes, though this latter affection may after a time progress no farther than a certain amount of nodular deformity of the joints of the terminal phalanges and there is a well-grounded English tradition that sufferers from arthritis deformans are long lived. The second form of the disease is an acute affection resembling ordinary rheumatism in its onset, but running a febrile course of lower degree and not getting entirely well as does acute articular rheumatism. The third form of the disease is usually a deforming process limited to one large joint. The joint most commonly affected is the hip and after this the shoulder. This is the only form of arthritis deformans that is likely to attack men more than women.

Differential Diagnosis.—The important point in differential diagnosis is the recognition of acute arthritis deformans from acute articular rheumatism. Arthritis deformans occurs more commonly in young women, though it may affect young men. The temperature is usually not above 102° F. and sometimes during the course of the disease may not exceed 100° F., and yet there may be distinct swelling and tenderness, especially of the smaller joints. The disease affects by preference the small joints of the hand, or those of the toes, though it may invade other joints. In nearly all cases there is some involvement of the joints of the cervical vertebræ and also of the temporomaxillary joint. The most important differential sign is the involvement of the jaw. This may only proceed to the extent of tenderness over the joint, with some difficulty of mastication. The soreness in the neck may be attributed to spasm instead of to the true joint affection, but such it is. The prognosis of the disease is not very favorable. As a rule, it may be said when what seems to be acute articular rheumatism fails to respond to the salicylates in the matter of being less uncomfortable and when there are signs of exudation into the joints and thickening, which does not begin to disappear after ten days, the frank recovery common in rheumatic arthritis must not be expected. Usually quite a little deformity is left. This may gradually disappear, however, leaving a certain amount of thickening that makes movement awkward, but is not unsightly. Even where there has been considerable ulnar deformity of the fingers, practically complete recovery is not impossible. There is a distinct tendency, however, for the disease to recur. The first attack is seldom completely recovered from and within the year, usually within some months, there is another lighting up of the affection which leaves more deformity than before.

Predisposition.—The disease seems to occur with sufficient frequency in families, to speak of a certain predisposition to its recurrence. This seems to mean no more than that a certain congenital condition of joints is favorable to the beginning of the disease. As a rule, the affection occurs in overworked people, especially those who are confined much to the house. It occurs typically in young servant girls at times when they are run down in health and seems to have a special tendency to occur in such persons not long after they have removed into a new country. It has often been noted that anemia and other constitutional disturbances are not rare about this time and arthritis deformans occurs with more frequency than at other times. Most patients give a history of having been exposed to some inclemency of the weather, but not infrequently it will be found that this cannot be connected directly with the affection. Sometimes there is a history of preceding rheumatism, but usually this is found to be no more than neuritic and neuralgic pains without any of the real characteristics of rheumatism.

Treatment.—Clarence E. Skinner, of New Haven, Conn., said that the most important question is that of exact diagnosis. Arthritis deformans differs from arthritis due to the pyogenic microorganisms or the gonococcus and its prognosis is a little better. In the textbook reconstructives, potassium iodide, cod-liver oil, iron and health springs are the chief remedies. Dr. Skinner considers that the most important considerations in the disease are proper diet and properly regulated physical therapy. As a rule, patients come for treatment in a run down condition and not infrequently they have been advised by physicians to limit their diet. Meat has often been denied them, especially red meat. As a rule, however, it will be found that they digest very well and that the system is craving for the elements found in red meat. Limitation of diet should be made with regard to the starches, though not infrequently it will be found that there is a disturbance of starch digestion. They should be made to wear woolen clothing next the skin and should be encouraged after the acute stage of the disease has passed to use their joints. This should not go to the extent, however, of breaking up adhesions, as only evil results come from it. Massage is not only indicated, but is one of the most important methods of treatment. Probably the most important remedial measure is dry, hot air. This does not mean hot-air baths at 200, but hot-air applications at 400 to 450. Frequent sweatings and ordinary hot applications serve to weaken patients and relax tissues and do more harm than good. A hot-air bath at 400, however, given in a cylinder covering the body up to the neck, acts as a stimulant that somehow brings about amelioration of the arthritic condition. Certain of the tonic and alterative drugs seem to be of service in special cases and a proper selection must be made for the individual. Potassium iodide has advocates and iron and chloride of gold may be found useful. The salicylates serve to relieve pain in cases where acute rheumatism is engrafted upon the original arthritis deformans. In the form of aspirin this will sometimes decrease the discomfort. Where there is constipation salt laxatives must be freely used. Digestive disturbances lead to the need to be corrected; for local pain, hot applications such as the hot-water bag are of service. Static electricity seems to do more than any other form for the affection. The wave current, applied by means of sheet tin electrodes molded to the heart lessen the discomfort and add to the flexibility of the joints. For local fibrous enlargements, the static

spark does good and for neuralgic conditions, the static spark is also useful. D'Arsonval's high frequency cage has been highly recommended and there is helpful general stimulation in central galvanization. Vibratory stimulation by lessening the spasm of muscles connected with the affected joints often serves a very useful purpose.

Types of Arthritis Deformans.—In opening the discussion, Dr. Joel Goldthwaite, of Boston, said that while it seems advisable to do away with multiplicity of terms, certain types of disease must be recognized. There is not only atrophic and hypertrophic arthritis deformans but also an infective type. It is hard to differentiate the microorganisms that may be responsible for the conditions, so that the general term seems advisable. In certain cases an enlargement of the ends of the bones is followed by atrophy of joint structures because of decubitus, as the ends of bones are pressed together. With regard to Still's disease, this seems to belong to the infective type and may be seen also in adults. When the spine is affected it is especially the cervical spine that is involved. With regard to acute and chronic arthritis deformans there seems to be a definite distinction. Bannatyne, the English authority, says that some acute cases never become chronic and some chronic cases have no history of having been acute. Dr. Goldthwaite believes that heredity may prove a predisposing condition. This is not a direct inheritance of the infectious disease, but rather the joints are of lower vitality, which almost invites infection. Such inheritance is not unusual. Weak feet or flatfoot may be inherited and often runs in families. Other joint conditions may follow the same rule. Monoarticular arthritis deformans seems an unfortunate term, since the disease is very seldom confined to a single joint and investigation will usually show more or less involvement of other joints.

Gonorrheal Arthritis.—Dr. F. C. Valentine, of New York, said that arthritis deformans occurs with more frequency in women than in men. It is in women that the lesions of the gonococcus are more destructive and the microorganism is more likely to get into the circulation with metastatic consequences. It seems not unlikely that some cases of arthritis deformans are really gonorrheal in origin, or, at least, that this microorganism has provided the basis on which other affections arise.

Hot Air Treatment.—Dr. De Lancey Rochester, of Buffalo, said that even without the cumbersome hot-air apparatus, it is still possible to obtain good results in the treatment of arthritis deformans. Hot-air baths may be given in bed by means of a spirit lamp, and if followed by friction of the skin, relaxation need not be feared. Massage careful passive movements will also be found of service. The affection occurs not infrequently in stout people and in these particularly sweats and massage are likely to be of service. The regulation of diet should exclude sweets and not much starch should be allowed. Fresh green vegetables, which contain organic iron in a form readily available by the system should be freely used. Where there is any tendency to constipation, salines should be given.

Secondary Infections.—Dr. McCrae, in closing the discussion, said that the gonococcus is not an etiological factor in the production of arthritis deformans, though the joint symptoms in chronic cases of the disease may be lighted up after gonorrhea or dysentery or other infection, as regards the word chronic rheumatism, it should be employed only for the condition in which symptoms of acute rheumatism, keep recurring. As for instance, when a child suffers from acute arthritic symptoms, followed by chorea and then endocarditis and a relapse of the arthritic symptoms; the index of acute rheumatism is that it leaves no sequelæ. It seems probable that all cases of arthritis deformans are infective and that the triple division of the disease is unnecessary. As a rule the mistake is made of putting patients on a spare diet. Many patients as a consequence are seen in a run down condition. The rule, on the contrary, should be to have them take the fullest possible diet consonant with good digestion.

Uric Acid and Disturbed Metabolism.—The medical profession is in many cases a creature of words. Uric acid has long been a shibboleth. It is supposed to have solved many problems. At last it is about to be abandoned. In this matter of rheumatism words count for so much and metabolism, katabolism and anabolism, quite as blessed words as Mesopotamia, are constantly heard. Nothing definite is known in this matter—why fool with idle terms. The most important mistake that they have unfortunately introduced is the limitation of diet in all chronic joint cases. Dr. Walsh has seen within the last month the wife and daughter of a physician, each suffering from the painful condition at the base of the big toe that is so often noted in connection with flatfoot, who had been carefully dieting themselves for gout for more than a year. One result of the mixing up of rheumatism and arthritis deformans is the free use of the salicylates, which always do more harm than good, since they destroy red blood corpuscles, make the patient more anemic and do not relieve pain. It has been objected that until the microbic cause of rheumatism and arthritis deformans is known, there is no justification in entirely separating the diseases. At the beginning of the nineteenth century there was in the measles and scarlet fever group of diseases, as yet undifferentiated from one another, what have now come to be recognized as four distinct diseases: Scarlatina, measles, German measles and Duke's, for fourth disease. Of none of these is the microbic cause known? Surely no one would say that there is no justification for their clinical separation.

Hot Air Applications.—Dr. Skinner said that hot air at low temperatures and hot air locally applied, had not given satisfaction in his hands. Local hot air even seemed to add to the pain. As a rule, for the severer cases of arthritis deformans, sanitarium treatment is needed.

Gonorrhea and the General Practitioner.—Dr. Ferd. C. Valentine, of New York, said that the general practitioner is as competent as the specialist to treat gonorrhea so long as the disease presents no serious complications. By treating patients at once, the general practitioner has the opportunity for successful abortive treatment, which is not often afforded a specialist. Not infrequently the reference of the patient to a stranger specialist adds to and emphasizes the neurasthenic symptoms which so often complicate the disease. The irrigation treatment may be carried out even in the office of the general practitioner without danger to himself or his patient and without the necessity for soiling floor or office furniture. Dr. Valentine considers that it would be advisable if so many cases were not at once referred to the genito-urinary specialist.

Convalescents from Tuberculosis.—Dr. A. Mansfield Holmes, of Denver, Col., said that the treatment of consumption, when the disease is taken sufficiently early, is now known to be reasonably successful. No one pretends, however, that the cured tuberculosis patient is likely to be free from the disease for long, unless he takes good care of himself. He cannot, for some years at least, work as hard as others without danger of relapse. It seems important that besides sanitariums for the treatment of tuberculosis, arrangements

should be made for outdoor life for convalescents from this disease for several years after their cure has been effected. This is the main problem that must be met now in connection with sanitarium treatment.

SECTION ON PEDIATRICS.

Second Day—June 8th.

(Continued from Page 1198.)

Congenital Occlusion of Lacrimal Canal and Acute Contagious Inflammation of Conjunctiva.—Dr. John E. Weeks, of New York, said that this condition was frequently mistaken for conjunctivitis, because of the pus which usually forms at the mouth of the duct. Differential diagnosis is to be made by bacteriological examination of the pus. Of the treatment he said time should be allowed possibly two or three months, for nature to open the duct, but if this does not occur the duct should be opened by instrumentation. He said that acute contagious conjunctivitis in infants is due to infection by one of four organisms, the gonococcus, the pneumococcus, the Klebs-Löffler bacillus, or the Koch-Weeks bacillus, that the value of differential diagnosis was important because of the assistance which this gave in treating the condition in the eye as well as the original site of infection and in the management of epidemics. The virulence of the conjunctivitis, he said, could not be depended upon as an indication of the form of the infection, as there were cases of gonorrheal ophthalmia which were so mild that they might be mistaken for ordinary muco-purulent conjunctivitis, but that these same cases were capable of setting up severe ophthalmia in other individuals or of the opposite eye in the same individual. The treatment of the different forms of conjunctivitis should be cleanliness obtained by the use of boracic acid solutions and the proper application of cold or heat being governed in this by the form of the infection—cold acting best in those cases which are due to organisms which grow best at high temperatures, this he said was particularly true during the early stages of the disease. The diphtheritic form should, of course, be treated by antitoxin injections. The silver preparations are useful in the gonococcus infection, but local treatment should be exercised not to interfere with the nutrition of the cornea.

In discussing Dr. Claiborne's paper Dr. Bennett, of Buffalo, said that in examining the eyes of truant children he had found a large percentage of refractive errors, thus in a measure accounting for their lack of interest in their school work and said that in several cases of persistent vomiting he had found the cause in the eyes of the patient.

Dr. Jarecky, of New York, said that he had followed up many cases of chorea treated at the German Policlinic and that correction of refractive errors in these cases had not been followed by improvement in the choreic symptoms in a single case. Glasses, he said, which are used to correct astigmatism in children, should be worn only temporarily and should be considered merely one of the resources at our command for restoring the child to normal condition.

Enuresis.—In a report of cases observed in dispensary practice, Dr. Maurice Ostheimer, of Philadelphia, said that Dr. I. Valentine Levi and himself had formed these conclusions: That while there is no single cause of enuresis, reduced tone of the sphincter muscles is present in most cases and that this is often the result of some antecedent or simultaneous illness. Among the many methods of treatment they found that in the vast majority of cases recovery followed the administration of the tincture of belladonna in ascending doses in the mild cases and of atropine and strychnine in the intractable cases. In the latter treatment they had begun with atropine gr. $^1/_{240}$ and strychnine gr. $^1/_{480}$ to one drop of water gradually increased until incontinence ceased and continued at the highest dose for from two to four weeks, and then gradually descended so that the entire treatment usually covered from six weeks to four months. The ingestion of fluids after supper was stopped and errors in diet were corrected in all cases. Daily cold sponge baths of two minutes' duration were given, and if hyperacidity of the urine had been present potassium citrate had been given and if phymosis existed circumcision was performed.

Bacteriology of Summer Diarrhea.—Dr. Wm. H. Park, of New York, pointed out the great difficulty of finding the specific bacterial cause of any given case of diarrhea because of the large numbers of organisms present normally in the intestines, many of which are not ordinarily inimical to health, but which under conditions occasionally arising might be productive of severe diarrheic symptoms. He said that of the enormous numbers of bacteria always present only a very small number of forms was pathogenic, and of these the ones studied closely resembled the colon bacillus in their biocultural characteristics that great difficulty had been experienced in isolating them. The term colon bacillus, he said, covered a great group, some varieties of which were pathogenic and developed at times at the expense of the other forms producing a diarrhea. The Shiga bacillus which had been isolated from the stools of dysentery patients in Japan was not the same as the dysentery bacillus found in this country, which, however, it closely resembled. In regard to the serum treatment of dysentery he said that results had been unsatisfactory presumably because when inflamed conditions exist in the intestinal tract it is practically impossible to counteract the activity of all of the pathogenic organisms present.

Infantile Dysentery.—Dr. J. H. Mason Knox, Jr., of Baltimore, analyzed 43 cases in which the *Bacillus dysenteriæ* (Shiga) had been found in the stools. These showed that the infection was borne by some common carrier and a close study, he said, had practically excluded previous conditions as to surroundings, foods, etc., and that drinking water was no doubt the means by which the bacillus entered the body, although the possibility of the house fly as an infecting agent must be considered. The Harris acid-mannite organism, so-called, was found in each case, but the clinical picture varied greatly, two general types occurring, however, one in which profound toxemia was present, the other being characterized by the severity of the bowel symptoms with mucous or bloody diarrhea. This difference in the symptoms may be due to the greater or less activity of other bacteria, *e.g.*, streptococci or staphylococci.

Bacillus Dysenteriæ and Infantile Diarrhea.—A study of 237 cases by Dr. L. Emmett Holt, of New York, showed that the bacillus may act pathogenically not only in summer but also during the winter months, and diarrhea occurs as a result both in children previously healthy, and in those already more susceptible because of disease, it occurs in various forms and under all conditions but previous conditions were found to have influenced the course of the diarrhea, as for example, 26 of the cases were breast-fed babies and presented milder symptoms and offered greater resistance to the disease, while of the 73 fatal cases the majority were among the hospital type of patients. In the management of diarrhea Dr. Holt advocated the withdrawal of milk as an article of diet particularly in

the severe cases, and because of the probable infectious character of the discharges from the bowel these, he said, should always be disinfected. He urged further study of the serum treatment and expected favorable results from its use in those cases of diarrhea in which the problem is to treat the infection and not the general condition which was present in so many cases before the acute symptoms occurred.

Diarrhea in Children.—Dr. J. C. Cook presented a study of 29 patients in the investigation of which he had attempted to prove a connection between the bacteria in the buccal cavity and those present in the intestines. His results were negative.

Management of Summer Diarrhea.—Dr. Thomas S. Southworth, of New York, said that this should begin before hot weather by hygienic and dietetic prophylaxis. The danger he said among infants was chiefly in proportion to artificial feeding and the greatest safety is secured by heating the milk, however, pure. Among older children errors in diet as well as bad milk are exciting causes, but local conditions and lesions once started are progressive and are intensified by a milk diet and under these conditions toxemia is the prominent factor. In severe cases prompt elimination of milk from the diet reduces the mortality. Opium should be used only to control excessive peristalsis. During the discussion of the foregoing papers on summer diarrhea the value of the so-called water treatment of the French physicians was emphasized, but that, because of differing social conditions, the substitution of barley water for plain sterile water was preferable in this country; that attention to absolute cleanliness, preliminary flushing out of the bowel, followed by the "starvation" plan of treatment with little or no opium, followed by gradual resumption of a carbohydrate diet, were the chief factors in the successful treatment of summer diarrhea in children.

Landry's Paralysis.—Dr. Henry Enos Juley, of Louisville, Ky., reported a case of this little known disease and suggested the possibility of a specific organism as a cause.

Hematuria in Infantile Scurvy.—Dr. John Lovett Morse, of Boston, said that although hematuria was generally considered an unusual complication of scurvy it is in reality a frequent symptom, that hematuria in a child accompanied by tenderness along the spine and elsewhere was a sufficient cause for making the diagnosis of scurvy, particularly if it cleared up upon the administration of antiscorbutic treatment—orange juice being the most frequently used in his practice.

Dr. Stowell, of New York, said that the hematuria of scurvy and the hemorrhages into the skin are probably due to a common cause, possibly a specific germ.

Intestinal Obstruction in Children.—Dr. John F. Erdmann, of New York, said that obstructions are due to intussusception, strangulated hernia, post-operative bands or Meckel's diverticulum. Intussusception, he said, was not a common cause and when it is met with it is not the sausage-shaped tumor of the text-books. Frequently it closely resembles floating kidney, or appendicitis and differential diagnosis may not be possible till laparotomy is performed. The symptoms were, he said, severe, sharp, colicky, abdominal pain, recurring periodically with an elevation of temperature. Treatment of this condition is mechanical, which consists of attempts to reduce it by enemas, but this should never be continued longer than six hours, after which operative treatment should follow. The danger in depending upon injection lies in the liability to reduce all of the intussusception except the part at the iliocolic junction and having at the same time a subsidence of symptoms, but which would be followed by more severe symptoms later when the remnant of the intussusception became gangrenous. In spontaneous reductions or those produced by injections the test of the completeness of the reduction should be the passage of a large bowel movement.

Dr. Abt added one other form of obstruction to the foregoing classification—that due to paralysis of the gut during the course of a profound disease elsewhere, such, for instance, as occurs in pneumonia; ptomaine poisoning may also simulate intestinal obstruction.

Dr. S. W. Kelly, of Cleveland, Ohio, said that if seen early spontaneous reduction might follow the use of opium, and that in the treatment by enema pressure of four or five pounds continued for fifteen or twenty minutes beginning with air and following this by water often produced a complete reduction where less pressure or pressure withdrawn after a shorter period of time might not effect a reduction.

Dr. Erdmann said, in closing, that he had always found great difficulty in keeping either the air or the water in the gut and that too great pressure was dangerous because of the weakened and edematous condition of the gut wall, but injection at the time of the operation was helpful.

Perinephritis in Children.—Dr. Wisner R. Townsend, of New York, said that this condition is rarely diagnosed correctly, and almost never before the formation of an abscess, but differentiation he said is possible. The conditions for which it may be mistaken are Pott's disease or hip-joint disease from which it may be diagnosed by the difference in the appearance of the stiffness about the part affected in the former and in the immobility of the hip-joint in the latter, from lumbago in the absence of leucocytosis in this, while an increasing leucocytosis occurs in perinephritis. The treatment, he said, is expectant—rest in bed and milk diet, till abscess formation, then it should be operated upon.

Dr. Jacobi called attention to the etiological importance of constipation in this condition.

Diagnosis of Enlarged Bronchial Lymph-nodes.—Dr. Alfred Friedlander, of Cincinnati, said that although great difficulty is present in making a diagnosis of this condition, the enormous frequency of tuberculosis of these glands, as shown by the post-mortem examinations made even a presumptive diagnosis of vast importance. Of value in this connection is a peculiar paroxysmal cough similar to that of pertussis but without the blowing inspiration, dyspnea or exertion with no heart lesion, hoarseness, with the general indications of a tuberculous condition, all these, with possibly evidences produced upon palpation and percussion over the mediastinum will give highly presumptive indications of tuberculous glands. The possibility of an enlarged thymus gland must not be forgotten, and also that enlarged bronchial glands may occur in pertussis and in measles. He said also that he had found in ten cases in which there were clinical symptoms of enlarged bronchial lymph-nodes, a reactionary lymphocytosis. He hoped further investigation might prove this a more certain method of diagnosis in this condition.

Dr. T. W. Kilmer, of New York, said that the cough, such as had been mentioned by Dr. Friedlander, was frequently due to abnormal retropharyngeal conditions.

Early Aural Examinations in Acute Diseases in Children.—Dr. James F. McKernon, of New York, said that middle-ear complications are far more frequent than is generally observed, that if aural examinations were regularly practiced as a part of every physical examination the cause of continued elevation of temperature after other symptoms had subsided

would be more frequently found. It is a fallacy, he said, to think that pain is always present in otitis media since a large percentage of cases never have any pain at all and careless otoscopy may not reveal the true condition of the drum. As an example of deceptive appearances he described a condition in which there was apparently a normal drum, but upon touching it with a probe, that which had seemed the drum was only a desquamated flake of epithelium which crumbled and came away, revealing an inflamed drum behind.

Dr. Fischer, of New York, said that he had frequently observed cases of acute disease in children in which there had been a subsidence of all symptoms except restlessness at night, the patients having normal temperature and pulse. This had been followed by spontaneous perforation of the ear drum and a discharge of pus with a complete clearing up of symptoms. Too frequent irrigation of the nasal passages, he thought, was a frequent cause of middle-ear disease.

Dr. Kerley reviewed 51 cases of acute otitis media in children, in 34 of which there was no pain or local manifestation; the only reason for making an aural examination being an elevation of temperature.

Dr. McKernon further said that if the ear drum bulges at all it should be incised at once, and there were many cases in which because of the danger of jugular bulb, or mastoid involvement paracentesis should be done even before bulging occurs. He said also that those cases of mastoiditis which had not been operated upon for the purpose of evacuating the pus usually resulted in deafness.

Some Physical Signs in Children not Sufficiently Emphasized.—This paper, read by Dr. Samuel McClintock Hamill, of Philadelphia, gave the results of observations made by himself and Dr. Theo. LeBoutillier on a large number of normal children. Of the lung they found the following conditions peculiar to children: (1) An area of impaired resonance under the left clavicle. (2) An area over the root of the lung in which there is a transmission of bronchial type of breathing. (3) Position greatly influences the percussion note. Of the heart: there was found a slight difference in the outline of heart dulness, but more marked was the fact that up to the sixth year the apex beat was found in the fourth interspace in the midclavicular line.

Hernia in Infancy.—Dr. Wm. B. Coley, of New York, said that the question whether the treatment of hernia in children should be mechanical or operative should be answered only when all conditions surrounding the individual child had been considered. If the child could be properly cared for and watched to see that the truss was kept in position then this method should be tried up to the age of four years. If, however, the truss does not retain the hernia, or if the hernia is irreducible or there is an accompanying hydrocele, or, if strangulation occur, a radical operation should be performed. If after trial of mechanical treatment up to the fifth year there is no cure of the hernia then operative treatment should follow. If seen after this age for the first time, and there has been no treatment by means of a truss, the peculiar conditions present must be considered in deciding upon the best treatment. In the treatment of umbilical hernia, the use of a flat button covered with soft cloth should be applied over the umbilicus and held in place by means of adhesive plaster. The Bassini operation is the one preferred by Dr. Coley, using, however, kangaroo tendon instead of silver wire as sutures and transplanting the cord as is the custom of most surgeons at the present time. He said that the belief that malignant disease is liable to occur in an undescended testicle was not upheld in his experience as he had seen only one case of this in an experience of 1,260 cases operated upon, and that there had not been one case in the 60,000 recorded at the Hospital for Ruptured and Crippled. Strangulation, he said, is comparatively rare in children and when it does occur it is due to adhesions and does not occur at the neck of the sack. As to the results of operative treatment in children the risk is very small (less than one per cent. of infections at the site of operation since the advent of rubber gloves, and only four per cent. before that), and as any operative treatment will be more productive of good results in the child than in adults the chances of permanent cure are practically certain.

Chorea.—Dr. W. C. Hollopeter, of Philadelphia, said that there is now less chorea than there was fifty years ago, and that this was due to the improved hygienic surroundings of the child. Much is said about the excess of school work put upon the child of to-day, but he thought that this was overvalued in its causation of chorea, the effect of poor personal hygiene in the home surroundings, irregularity in daily life, overfeeding, etc., being more potent. One writer on the etiology of chorea has said that it is a brain disease, while the relation between rheumatism and chorea is an interesting question not yet settled. The most important contribution to the knowledge of this disease has come from the discussion at meeting of the British Medical Association in July, 1903, the essence of which was that chorea is a disease of microbic origin. A diplococcus has been isolated from cases of chorea and there seems to be reason for the belief that this is implanted upon a previous micrococcus infection making, if this is true chorea, a mixed infection. A diplococcus has also been isolated from rheumatic patients which is believed to bear a close relation to that of chorea.

In the treatment of chorea, Dr. Hollopeter has abandoned the use of specific drugs and depends upon prolonged warm baths. These he gives twice daily, each one lasting from one to two hours. The temperature of the bath should be such as to give the child no unpleasant sensation (usually from 90° to 98° F.). From this temperature it is cooled down till it soothes the whole cutaneous surface. After the child has been in the bath for the required time gentle massage is given and the child dried and allowed to sleep. In from 50 to 60 cases treated in this way he has reduced the duration of the attacks from three months to six weeks.

Nasal Affections of Children.—Dr. Louis J. Lautenbach, of Philadelphia, said that children are great sufferers from obstruction of the nostrils. They are very prone to diseased conditions affecting the nose and occluding the passageway. The mischief thus occasioned is common, and unfortunately often very serious to the life of the child as well as to its health. Along the respiratory apparatus tonsillitis, pharyngitis, laryngitis, but particularly bronchitis and pneumonia, are commonly so caused—in great part by the mouth-breathing. Stomach and intestinal disorders are frequent results of nasal disease. Nervous affections and lack of mental and physical development are by no means unusual. General lack of vitality and that indefinable something called a cold are frequent results. Lack of development of the dental arches and irregularities in tooth formation as well as placement can very often be traced directly to nasal disease, the widespread mischief thus caused lasting often through life. An impartial, unbiased examination will nearly always develop a satisfactory diagnosis. The connection between secondary conditions and the primary cause may not be clear, but when once understood the local and general treatment can be instituted harmoniously and

the results will more than repay for the difficulties encountered. Fortunately nasal troubles are easily cured as a rule.

Myxedema and Diabetes Mellitus.—Dr. A. A. Strasser, of Arlington, N. J., made a very complete report of this unusual combination.

SECTION ON NERVOUS AND MENTAL DISEASES.

FIRST DAY—JUNE 7TH.

The meeting was called to order at 2.15 P.M. by the Secretary, Dr. David I. Wolfstein, of Cincinnati.

Resolutions on Dr. Pearce.—Owing to the death of Dr. F. Savary Pearce, Dr. Howell T. Pershing, of Denver, Col., was elected Temporary Chairman, and there was no Chairman's Address. A committee composed of Drs. Charles K. Mills, Philadelphia; Richard Dewey, Wauwatosa, Wis., and W. J. Herdman, Ann Arbor, Mich., was appointed to draw up resolutions on the death of Dr. Pearce, and a similar committee on the death of Dr. Orpheus Everetts, of Cincinnati, Ohio, was composed of Drs. F. W. Langdon, Cincinnati; Hugh T. Patrick, Chicago, and Dr. Brainerd.

Public School and Health.—The report of the Committee on the Collection of Information Regarding Public School Methods and Their Effects upon the Mental and Physical Health of School Children was read by Dr. W. J. Herdman, of Ann Arbor, Michigan, the committee consisting of Drs. F. Savary Pearce, James McBride, Hugh T. Patrick, C. H. Williams and W. J. Herdman. He reported that the collection of the data on this subject was as yet incomplete and considered (1) the medical examination of the child at the time it enters upon school life, and (2) the examination during the years thereafter. There are many other factors such as the hygienic and sanitary surroundings in the schoolrooms and buildings, which have to be eliminated before the schools methods can be charged with affecting the health of the children. The work in this and other countries was reviewed and particularly considered under the following subdivisions: (1) Inspection of pupils and teachers with a view to detecting any contagious or infectious disease; (2) investigations of the sanitary and hygienic conditions of the school buildings, rooms, equipments and environments; (3) examination of individual pupils, especially those who have attracted attention by deficiency in hearing, eyesight, etc. The material decrease in the contagious and infectious diseases among school children in New York, Philadelphia, and other cities since the institution of medical inspection in the schools was commented on with favor. Upon motion of Dr. C. B. Burr, Flint, Michigan, this report was accepted and the committee continued.

SYMPOSIUM ON CHOREIFORM AND OTHER SPASMODIC MOVEMENTS.

Symptomatology, Pathology and Treatment of Choreiform Movements.—This paper was read by Dr. William G. Spiller, of Philadelphia, in which he considered at length the clinical aspects of Sydenham's chorea, Huntingdon's chorea, posthemiplegic chorea, postapoplectic hemihypertonia athetosis and pregnancy occurring during pregnancy, laying particular stress upon the latter condition and also upon the time of life at which the disease was most likely to occur, the pathology of the two former conditions being carefully discussed. In the treatment, he considered rest in bed of paramount importance, and went fully into the details of the arsenical treatment, in which the patient should be carefully watched for symptoms of neuritis, and with which the best results are obtained when the drug is employed during the first three weeks of the disease. A report of 180 cases of this disease before the Moscow Society for Diseases of Children was referred to, 86 of which were treated with arsenic, and in these the best results were secured, the others being treated with rest, antipyrin, bromide and quinine, the least useful being the two latter drugs.

Convulsive Tic.—This paper was read by Dr. Hugh T. Patrick, Chicago. The writer belived this condition to be very common but frequently misunderstood. The characteristics of the disease were fully discussed, and the points of differentiation between it and chorea, spasm, paramyoclonus and myoclonias, abnormal movements dependent upon hallucinations or delusions, stereotypic and excessive gesticulation outlined in detail. The two principal factors upon which the prognosis depends are the nature of the disease and the nature of the subject, and while the prognosis in children is usually good, it is a most rebellious disease. He referred to one case in which prolonged artificially induced sleep had been of considerable value, while in another the same success had not been attained. The causal factor should, if possible, be found and removed, after which, in children especially, stimulation of inhibition by means of rewards for controlling a spasm and punishment for not doing so, are of value; the latter, however, must be slight as cases were referred to in which untoward results had been caused by severe punishment.

Hysterical Movements.—This paper was read by Dr. Howell T. Pershing, of Denver, Col., who stated that he believed the morbid process to be an excessive reaction due to morbid ideas and motions occurring in the higher cortical centers. The differential features of the mode of onset, and the general character of the movements were considered, the author stating that he believed a pysychic origin could generally be traced. The highly coordinated movements, such as saltatory spasm; the hysterical imitations of chorea, hysterical blepharospasm, hysterical imitations of Jacksonian epilepsy and hysterical torticollis were considered in detail seriatim, followed by suggestions as to prognosis and treatment, in which the mental influence is of paramount importance, and which must be guided by the ideas applicable to the treatment of chorea in general.

Dr. Charles K. Mills, of Philadelphia, in opening the discussion, considered Sydenham's chorea due to infection caused by the action of toxins on an exhausted nervous system, while Huntingdon's chorea came under the developmental or family type. Rest and hygienic treatment he considered of paramount importance, and the drugs which are of the most importance are those which tend to restore the tone to the nervous system.

Dr. B. Onuf, of Sonyea, N. Y., reported a case of spasm of the retina, recti muscles and pupils, which the patient began when an oculist prescribed for her white glasses, prior to which time she had been wearing colored glasses, and which he attributed to hypersensitiveness of the retina due to frequent accommodation, the light being too strong to be borne so soon as slight dilatation took place.

Dr. McGregor, of Saginaw, Mich., referred to the cases of chorea resulting from fright, several of which he related and also reported one case in which the condition disappeared upon the removal from the patient's diet of veal and reappeared eighteen months later, when this article of food was again indulged in.

Dr. Hamilton, of Independence, Iowa, referred to the work which he had done at the State hospital for the insane at that place, and gave the mode of death, clinical and pathological findings in several cases. He also reported a case in which the condition had been present in

all but two of the female members of the family for three generations, never being noticed until pregnancy, and the two exceptions were never married, although he inclined to the opinion that the chorea was present before the advent of pregnancy, which simply aggravated its manifestations.

Dr. D. J. McCarthy, of Philadelphia, reported the clinical and pathological findings in several cases, and also referred to one case which had been considerably benefited by suggestive therapeutics for a time, but afterward relapsed.

Dr. John Punton, of Kansas City, Mo., referred to a man who had been operated on five times for tic, and in whom he had a surgeon who had suggested the advisability of removing the gasserian ganglion, which was cured by means of suggestive therapeutics.

Dr. John W. Rhein, of Philadelphia, reported the pathological findings in a case of chorea dying during the second week of the second attack of the disease, in which there was some change in the muscles, but no demonstrable lesion in the spinal cord or cortex. He also referred to the possibility of the occurrence of choreiform movements in locomotor ataxia.

Dr. Wharton Sinkler, of Philadelphia, said that there was too much of a tendency to include under one general heading the conditions due to different causal factors.

These papers were further discussed by Drs. C. H. Williams and W. C. Jones, of Texas, and closed by Drs. Spiller, Patrick and Pershing.

Second Day—June 8th.

Nature of Traumatic Sclerosis.—This paper was read by Dr. A. C. Brush, of Brooklyn, who after referring to the fact that the earlier observations indicated organic disease and to the physiological experiments of Mendel, Schmaus, Berkeley and others, stated that at the present time it is a question whether the effects of trauma on the nervous system are due to conditions of grave hysteria, functional neurosis or to a type of multiple sclerosis. This was followed by a careful résumé of the literature on the subject; a report of his personal clinical observations in fifteen cases, particularly differentiating between this condition and true hysteria and pseudosclerosis described by Westphal and Strümpell; and a report of the pathological and microscopic findings in five cases, particularly outlining the differences between traumatic sclerosis and multiple sclerosis. In conclusion, he stated that his opinion coincided with that of Strümpel that traumatic sclerosis is different from multiple sclerosis and that the weight of evidence is in favor of a distinct organic entity.

Dr. Angell, of Rochester, N. Y., referred to the frequently long duration of these cases, during which time they were lost sight of and the consequent scarcity of pathological findings thereon. He urged the elimination of the idea of a specific form of nerve injury in the examination of the case and that such examination be similar to that in any other case of spinal trouble, irrespective of the cause. A case developing marked disturbance of the muscular apparatus six months after injury in a railroad wreck, at the time of which there was no apparent injury, was cited as showing that primary degenerative changes were no doubt minute, while the secondary changes are quite extensive. Another case illustrating the opposite type was cited, where the patient suffered from marked hysteria between the date of the collision and the trial, after which he gradually became well. He believed that only in a small minority would we find elementary pathological changes.

Dividing Line Between Neuroses and Psychoses and the Position of Neurasthenia.—This paper was read by Dr. Richard Dewey, Wauwatosa, Wis., who discussed at some length the question of a dividing line between neuroses and psychoses, and stated if there was such a line, insanity was to be found on both sides thereof. He discussed fully the meaning and use of the term insanity and believed psychoses to be a preferable term thereto, following this by remarks on the proposition to treat neurasthenia as a psychosis and the classification recently proposed by French writers and more recently followed by C. L. Dana.

Campaign Against Insanity.—Dr. W. J. Herdman, Ann Arbor, Mich., considered the various forms of the disease and prospects for the cure thereof, and the etiology of the condition. He then reviewed the work that had been done in the United States and other countries for the study and treatment of the condition, consisting in some instances of special hospitals, in other of special wards, where the pathologists, clinicians and laboratory workers can combine their efforts, particular mention being made of the work in New York, Scotland and Michigan. He believed that the field of experimental pathology had much promise in it, but that the comparison of the mental status of the insane with that of the healthy person was the surest approach to the solution of the problem.

Dr. Searcy, of Alabama, believed the term psychosis to be much preferable to lunacy, insanity, *non compos mentis*, etc., particularly in view of the fact that in the courts of law alone lies the power to declare a man legally insane. He then classified the psychoses into the defective type, such as the manias, melancholias and phobias, and the erratic type, such the neurasthenias, hysterias, paranoias, moral delinquencies and moral perversities; and the drink and drug habits.

Dementia Præcox.—Dr. F. X. Dercum, of Philadelphia, after reciting his objections to the term, among which were the fact that many of the cases recovered, he stated that he preferred the term insanity of adolescence. He then outlined in detail the points of similarity and difference between hebephrenia, katatonia and dementia paranoides, and considered at some length the prognosis of each thereof.

Dr. F. W. Langdon, Cincinnati, Ohio, remarked upon the inappropriateness of the term dementia præcox in those cases which developed at thirty, forty or fifty unless the inception could be traced back to earlier years, which objection he felt was also applicable to the term "insanity of adolescence."

Dr. F. X. Dercum, in closing, emphasized the importance of keeping the earlier cases by themselves rather than placing them in the same group with the older ones.

(To be Continued.)

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear.*

Adolescence; Its Psychology. By G. Stanley Hall. Two volumes. 8vo, 770 pages. D. Appleton & Co., New York.

Graves' Disease Without Exophthalmic Goiter. By Dr. W. H. Thomson. 8vo, 143 pages. Wm. Wood & Co., New York.

A System of Practical Surgery. By Drs. von Bergmann, von Bruns and von Mikulicz. Volume II. Translated and edited by Drs. W. T. Bull and C. P. Flint. 8vo, 820 pages. Illustrated. Lea Brothers & Co., New York and Philadelphia.

INDEX

Abdomen, upper, the association of surgical lesions in the, 1111
Abdominal drainage, 1147
pain of intestinal origin, 289
ring, internal, unsuspected irritation of, 953
signs, deceptive, 557
sympathetic, paralysis of, following labor, 311
versus vaginal hysterectomy, 983
Abortion, etiology and medical treatment of, 1007
medicolegal aspects of criminal, 1007
the surgical treatment of, 1007
Abortive treatment of gonorrhea in the male, on the, 488
Abrahams, R., sea-bathing in some forms of skin diseases, 593
Abrams, Albert, the tracheal traction test as an aid in the recognition of the asthmatic lung, 1207
Abscess, postpartum tubo-ovarian, 1023
surgical treatment of pulmonary, 422
tardy, of the liver, 1082
Abscesses, multiple, of the omentum, 1150
Absorptive capacities of the skin, the, 987
Academy of Medicine, American, the president of, 1182
Acapnea, a result of lowered barometric pressure, 212
Accessory sinuses, the prevention of diseases of the, 958
Accidents, railway, during 1902, 37
Accouchement forcé, the difficulties and dangers of, 1150
Aceton-content of the organs in cases dead from diabetic coma, the, 937
Achylia gastrica, 1138
Acid creamless milk in gastro-enteritis, 214
fast bacteria, resistance of, 798
salicylic, harmful, 79
Actinomycosis, cause of human, 216
of jaw, 179
progress in, 1200
Action of drugs on the coronary circulation, 359
physiological, and chemical constitution, relations between, 408
Addison's disease and frequency of urination, 524
disease, the adrenal in, 1001
Adenitis, treatment of cervical, 557
Adenoid operations and mortality, 518
operations at home, 518
Adenoids and adenoid operation, 1182
Adenoma, malignant, of the liver, 1000
of sweat glands, 798
Adhesions in brain surgery, the use of silver foil to prevent, 422
Adirondack Cottage Sanitarium, 364
Adjuvant, steam valuable, 525
Adrenal, function of, 1001
gland infusion, 808
in Addison's disease, the, 1001
Adrenalin, brief action of, 949
treatment of surgical shock with, 123
Adulteration, food, in New York State, 175
of foods, legal action regarding, 711
After-treatment of intranasal operation, 164
Agglutination phenomena of the staphylococci, 652
test in typhoid, improved technic of, 940
Agglutinins, experiments upon, 717
specific and non-specific, 716
Agraphia and aphasia, 282
Aids, laboratory, to diagnosis, 259
Air-cushion in surgery, an improvement on the, 855
Air cystoscope, 425
embolism, 215
and feeding in pneumonia, 526
water and unbreathed, 525
Albumin, a new method of determining, 455
in the feces, presence of, 795
Albuminuria as an accompaniment of diabetes mellitus, 212
cyclical, 211, 358
of puberty, 161
physiological, 499
postural, 358
Albuminuria, value of, in differentiating pyelitis from cystitis, 32
Albumoses and peptones, 173
Alcohol and metals, action of, upon the sea urchin, 359
and other drugs, 378
as a cause of locomotor ataxia, 1129
ether and chloroform on natural immunity in its relation to leucocytosis and phagocytosis, 757
in medicine, the prohibition of, 416
on resistance to infection, 939
problem, a novel aspect of the, 459
Alcoholism and arteriosclerosis, 1143
and degeneration, 701
ergot in, 445
Aldrich, Charles J., fracture of the base of the skull as a cause of epilepsy; report of case, 979
Alexian Brothers' Hospital, report of the, 317
Alloxuric bases in aseptic fevers, the, 606
Allport, Frank, the relationship existing between ophthalmology and otology and dentistry, 730
Altitude on blood corpuscles and blood plates, effect of, 383
Alumni Association of St. Luke's Hospital, the, 755
Association of the College of Physicians and Surgeons, New York, 225, 992
Amaurotic family idiocy, 716
Amblyopia, possible etiological factor in tobacco-alcohol, 218
American Academy of Medicine, 664
Association of Pathologists and Bacteriologists, 664, 711, 715, 762, 807
Association of Railway Surgeons, 1134
Climatological Association, 852, 1133
Dermatological Association, 1135
Gastro-enterological Association, 1219
Gastro-enterological Association, seventh annual meeting of the, 665
Gynecological Society, the, 1092, 1097
Institute of Physical Culture, 664
Laryngological Society, 177
Medical Association, the, 1131, 1136, 1152, 1184, 1220
Medical Association—section on materia medica, pharmacy and therapeutics, 1198
Medical Association — section on medicine, 1137, 1184, 1220
Medical Association—section on nervous and mental diseases, 1231
Medical Association—section of obstetrics and diseases of women, 1148, 1194
Medical Association—section on pediatrics, 1150, 1197, 1228
Medical Association—section on surgery and anatomy, 1143, 1189
Medical Association, special clinics for, 900
Medical Colleges, Association of, 1219
Medical Editors' Association, 902
Medical Temperance Association, the, 1039
Neurological Association, 665
Proctologic Society, 903
Society of Clinical Surgery, the, 718
Society of Tropical Medicine, 661
Ammonium sulphate method of sterilizing catgut, the, 934
Amœbæ dysenteriæ, 557
Amputation at the hip-joint for sarcoma of the femur, 406
interscapulo-thoracic, 145
of frozen feet and hands, to receive $10,000 on account of, 851
Anaesthol, 760
Anastomosis for the vas deferens, 407
intestinal, a new device and method for, 40
intestinal, a new method for performing, 199
intestinal, by a new method, 1147
Anatomy and physiology of the peritoneum, the, 422
Anatomy, pathological, 1181
Anchylostomiasis, 183
podophyllin in, 606
treatment of, 750
Andrade, Eduardo, new stain for diphtheria bacilli, 498
Andrews' technic, 1189
Anemia or splenomegaly, types of splenic, 998
pernicious, alterations of the gastro-intestinal canal in, 891
pernicious, of the stomach, 1138
pernicious, spleen in, 1201
splenic, complexity of, 999
Anesthesia in abdominal surgery, 1083
nitrous oxide-ether, 1159
water, 183, 184
water, in surgery, 1174
work, two advantageous procedures in, 255
Anesthetics, 425
Aneurism, aortic, of traumatic origin, 747
of the innominate artery, 1225
popliteal, Matas' operation for, 1145
traumatic, of the subclavian, 30
Aneurisms of the aorta, 209
Angina, syphilitic, 1184
Vincent's, 652
Angiomata, treatment of, 163
Aniline poisoning, 249
Animal heat mechanism, action of morphine on, 213
Animals apparently dead, resuscitation of, 48
Ankle-joint, dislocation of the, 1048
Antenatal rigor mortis, 452
Anthrax bacilli, the capsule of, 938
Antibody from the blood serum of cancer patients, an effort to produce an, 217
Anti-cigarette crusade, an, 368
Antidote for snake bite, 948
Antifat certificates, 616
Antihemolytic properties of the serum of nephrectomized rabbits, 1103
Antimalarial operations, 747
Antimosquito war, 1136
Antipneumococcus serum, 1141
Antistreptococcus serum in articular rheumatism, 210
Antitoxin and diphtheria, 367
as a prophylactic in diphtheria, the value of, 215
for the poor, 567
method of using, 68
plant, establishment of, 269
State manufacture of, in New Jersey, 613
stations, establishment of, 757
treatment of hay fever, 219
tuberculous, internal administration of, 403
Antivivisection in England, the pioneer of, 903
Aorta, etiology of aneurisms of the, 209
and mitral disease, 1186
aneurism of traumatic origin, 747
Aphasia and agraphia, 282
Apocrypha, the physician in the, 179
Apomorphine, elimination of, by the stomach, 71
Apparatus for nitrous oxide-ether anesthesia, 1159
Appendectomy, miliary tuberculosis following, 1104
Appendicitis, a chief predisposing cause of, 1090
acute, and its medical treatment, 883
and influenza, 1224
and pneumonia, 284
an early symptom of severe, 499
chronic, 1213
diagnosis of, 1147
factors in the mortality of, 1147
forensic importance of, 164
in children, 1030, 1147
leucocytosis in, 81
mortality of, 1189
obstruction and distention as a cause of, 845
pathology of, 912

Appendicitis, present status of, 74
symposium on, 46
the mortality of, 49
value of blood count in, 164
Appendix and typhoid, the, 1084
Appointments, 134, 229, 901
medical, at the hospitals in Montreal, 1183
Arctic health resort, an, 367
Army medical reserve corps, proposed, 464
Arsenical poisoning in England, 38
Arsenic habit, 360
therapeutics of, 574
Arteries, resection of, 422
Arteriosclerosis and angina pectoris, 1184, 1185
and infectious disease, 1142
and nephritis, 1142
clinical studies in, 951
earliest sign of, 951
in its relation to life insurance, 947
of spinal cord, 812
pathology of, 1142
serum treatment of, 170
statistics in 4,000 cases, 1142
the dietetic treatment of, 292
under forty-five years, 1143
urine in, 951
Arthritis and endocarditis, experimental, 1001
deformans, 670, 1193
deformans, history of, 1226
deformans, pathology of, 1225
gonorrheal, 1227
Arthropathies of locomotor ataxia, 572
Ascending infection, 670
Ascites, abdominal, with 150 tappings, 640
suture of the omentum to the parietal peritoneum for, 448
Asepsis, 424
in catheterization, 218
Aspect of food preservatives, the sanitary, 304
Asphyxia, traumatic, 1030
Associated Health Authorities, meeting of, 1090
Association of American Physicians, 852, 941, 949, 997
Asthenopia, 280, 921
Asthmatic lung, the tracheal traction test as an aid in the recognition of the, 1207
"As through a glass—darkly" (eye-strain controversy), 560
Astringent, intestinal, bismutose as an, 170
Ataxia, locomotor, arthropathies of, 572
Atheroma, suprarenal, producing lesions of, 702
Athletics, college, some facts about, 506
Atomic theory of matter again, the, 1093
Atony of the stomach, 955
Atrophy, acute yellow, 1000
gastric, and pernicious anemia, 1138
in adrenals, 1001
of the liver, acute yellow, with pregnancy, 451
testicle, 334
Atropine in incarcerated hernias, use of, 170
Augustana Hospital, gift to, 509
Hospital, money for, 994
Auricle, right, determining pressure in, 70
Auscultatory percussion, 161
Australia, notes on hydatid disease in, 181
Auto-intoxication, intestinal, the efficiency of persodine in phenol poisoning and, 593
Automatic drawing, 618
Automobiling and nervous manifestations, 34
Autopsies in public hospitals, 459, 570
Avian tuberculosis, 763
Axillary plexus, surgical lesions of the, 1145
Azoturia, 1004

Babcock, Robert H., the pulse as a guide to the life insurance examiner, 774
Babies and hot weather, 1036
Baby farms, war on, 709
Bacilli, flagellar and somatic agglutinins in, differentiation of, 807
included in the dysentery group, varieties of, 764
living and dead tubercle, in the production of antituberculin, comparison of, 765
long, of gastric cancer, 166
tubercle, differences in precipitins produced by, 765
tubercle, in animals, agglutination of, 1130
tubercle, observations with tuberculins from different races of, 765
typhoid, in urine and feces during convalescence, 844
Bacillus agglutinated by high dilutions of typhoid serum; isolated from water, 766
coli in nature, distribution of, 939
dysenteriæ (Shiga) in infants, 481, 1228
long, of the stomach contents, the, 658
of Koch, modifications of the, 606
tubercle, the biochemistry of, 810
typhi murium, infection with the, 69
Backward infection, 668
Bacteria, acid-fast, resistance of, 798
and money, 364
intestinal, importance of normal, 263
in the mesentery of normal animals, 765
Bacterial versus animal parasitic infections, 997
Bacteriology and caffeine, 939
of conjunctivitis of measles, 659
of eczema, 449
of the blood, the, in typhoid fever, 1046
Bacteriuria, frequency of, 670
Bad State charity laws, 364
Baker, R. D., physiological and clinical aspects of hydrotherapy with its special reference to the treatment of psychoses, 599
Bakers, hours for, 414
Bandage, an improved hemostatic, 407
Barber-shops, sanitary, for Ontario, 417
Barsky, Joseph, case of tetany, 350
Bartlett machine, the, 329
Basedow's disease, 312
disease, treatment of, 750
Basilar meningitis, 755
Bazaar to aid hospital, 851
Beadles, F. H., prevention of the spread of ringworm, 147
Beck, Carl, the utilization of the lower lip in rhinoplasty; a new procedure, 439
Bellevue alumni, Chicago meeting of, 802
alumni, meeting of the western association of the, 710
consultants to, 149
exoneration of, 413
Hospital pathological laboratories, director of, 992
Hospital—the old and the new, 865
new head for, 993
the new, 850
training school, site for, 507
Bell, John W., clinical aspect of chronic myocarditis, 880
Benedict, A. L., indicators in gastric analysis, with special reference to tropeolin O. C., 597
Bequests to charity, 850
Beriberi, etiology of, 165
Berkeley, William N., some notes on vocal fremitus, 1009
Berlin Hospital, 135
letter, 854
Best, G. N., acute appendicitis and its medical treatment, 883
Beverage bill for 1903, the, 806
Bierhoff, Frederic, on the abortive treatment of gonorrhea in the male, 488
Biggs, Hermann M., preventive medicine: its achievements, scope and possibilities, 1120
the administrative control of tuberculosis, 337
Bigotry, medical, 617
Bile and pancreatic fluid, 1221
human, on the secretion of, 1101
observations on human, 652
Biliary tract, drainage of the, 1147
Biochemistry of the tubercle bacillus, the, 810
Biography of Dr. William Pepper, 509
Biologists, Japanese, 712
Bismutose as an intestinal astringent, 170
Blackwater fever, 210
Bladder, amount of fluid required in the, 425
in health and disease, the, 423
irritable, in women, 270
the internal treatment of diseases of the, 390
urinary, tuberculosis of the, 924
Blake, Joseph A., some considerations in the treatment of tuberculosis of the testicle, 923
Bleeding point, difficulty of locating, 1140
Blood after death, bacteriological examination of, 796
after muscular exercise, changes in the, 987
and urine in eclampsia, the, 310
coagulation, chemistry of, 407
coagulation, notes on, 652
composition, influence of blood-pressure on, 407
count, value of, in appendicitis, 164
Blood counts, the value of, in very young children, 186
diseases, pathogenesis of, 126
effusions, organization of, 216
examination in scarlet fever, 125
from cases of lymphatic leucemia, 907
human, new method of identifying, 619
in epilepsy, the, 454
in gastric contents and feces, detection of, 211
in malignant disease, 125
in pneumonia, the, 700
in pregnancy, parturition and puerperium, the physical chemistry of the, 167
in pulmonary tuberculosis, the, 797
instrument for timing coagulation of, 182
of nephrectomized rabbits, on the coagulation time of the, 717
or normal guinea-pigs, the, 764
of the new-born, corpuscular content of the, 251
osmotic pressure of the, 161
picture, 998
plates, nature of, 166, 717
poisoning an accident, 1090
pressure in surgical cases, 703
pressure on blood composition, influence of, 407
pressure, results of some recent experiments on, 383
serodiagnosis for identifying, 652
the changes in the viscosity of, 238
Bone-setter, the passing of the fashionable, 903
suture with silver wire, 1031
Books received, 240, 288, 384, 432, 480, 576, 672, 720, 768, 864, 912, 1056, 1232
for the hospitals, 175
medical, popular two hundred years ago, 1097
Boston hospital, millions for new, 70
Bourland, Philip D., chickenpox concurrent with smallpox, 20
Bovaird, David, Jr., the pathology of lobar and bronchopneumonia in infants and children, 820
Bovine tuberculosis, 158
tuberculosis on human health, the influence of, 876
Bowel, paralysis of the, 46
Brain clot, operative removal of, 235
gunshot wound of the, 281
tumor, 332
tumor with autopsy, 92
Brains, wet, 1223
Branch hospitals, 947
Branham, Joseph H., suture of the omentum to the parietal peritoneum for ascites, 448
Brass poisoning, chronic, 1176
Breast amputation, 286
Breasts, bilateral diffuse virginal hypertrophy of the, 45
Bright's disease, chronic, 426
disease, chronic, from an ophthalmic standpoint, 427
disease, chronic, operative treatment of, 121
disease, decapsulation of the kidney for, 427
disease, dietetics in the treatment of, 271
disease, popular idea of, 286
disease, the surgical treatment of, 426
Bromides, use of, 519
Bronchi, bronchoscopy for foreign bodies in the, 556
Bronchitis, infantile, 335
spasmodic, 526
treatment of, 612
Bronchopneumonia, 377, 379, 524
in children, 817
so-called primary, 526
treatment of, 612
treatment of, in children, 823
Bronchoscopy for foreign bodies in the bronchi, 556
Browd, E. K., abdominal ascites with 150 tappings, 640
Brown, S. H., the theatrical profession as a factor in the dissemination of disease, 551
F. Tilden, some features of renal tuberculosis, 783
Bubonic plague in Peru, 663
plague progressing, 713
plague spreading, 788
Bull, Dr. W. T., loving cup for, 912
Dr., resigns from Columbia, 746
Bull's, Professor, farewell, 945
Bureau of Health, changes in, 709
of Health, reorganization of, 133
Burns and scalds, treatment of, 318

Burthe, F., cryoscopy of urine. The method of Claude and Balthazard, 149
Burt, Stephen Smith, valvular disease of the heart and its treatment. Case of mitral obstruction and insufficiency with tricuspid regurgitation and pulsating liver, 533
Butler epidemic, report on the, 462
Butler, Glentworth R., the prophylaxis and medical treatment of diseases of the pancreas, 968
relief corps returns, 228
Butler's typhoid spreading down the river, 79
Byways of medical literature—XIX, 82; XX, 616; XXI, 1093, 1200

CÆSAREAN section in placenta previa, 1149
section, remarks on, 92
section, the value of vaginal, 311, 354
Caffeine and bacteriology, 939
Caisson disease, 128, 232, 233
Calcium salts, 505
salts and thrombosis, 950
the biological function of, 212
Calculus, vesical, 621
"Call down," a useful, 712
Calomel in pneumonia, 219
Cambridge, the late Duke of, and the doctors, 713
Canadian liquors, no adulteration in, 711
Medical Association, 272
medical men in Europe, 711
militia, the medical branch of the, 711
Canal site a pest hole, 613
Cancer, British, research fund, 38
gastric, long bacilli of, 166
gastric, a remarkable case of, 1021
intestinal, 42
of the intestine, 975
of the pancreas, 236
of the uterus, early diagnosis of, 41
of the vulva, the differential diagnosis of, 45
Cancer, Otto Schmidt's treatment of, 890
prophylaxis of gastric, 163
research fund (English), report of the, 1088
treatment of, by its own toxin, 280
Capsule of anthrax bacilli, the, 938
Carbolic acid, pure, in the treatment of smallpox, 360
acid, suicide by, 415
Carcinoma basocellulare, special consideration of, 808
case of, 286
colloid, of the rectum, 47
gastric, cardiac dulness in, 982
gastro-enterostomy for supposed, 946
of retained testis, case of, 519, 917
of stomach, rare complications of, 68
of the lung, 379
of the stomach, 996
of the uterine cervix, 1148
results of oophorectomy for mammary, 501
spontaneous cure of, 358
Cardiac symptoms, 1138
Cardiospasm, idiopathic, 954
Carnegie institution and its appropriations, 39
Cars for the tuberculous, 463
railroad hospital, 462
Cartilage, regeneration of, 445
Cases, glass-shelved, instrument hanger for, 555
Catheterization, asepsis in, 218
synchronous ureter, 423
ureteral, 122
Catgut, the ammonium sulphate method of sterilizing, 934
Catholic charities, 1134
Cat nuisance, the, 755
Cells, lacking of red blood, 71
Cerebral circulation, the effect of various essences on the, 654
form of grip, 661
localization, 1040
Cerebrospinal influenza, 894
lues, 811
meningitis epidemic in children, 954
meningitis, epidemic of, notes on the, 1063
meningitis, the clinical features of, 1065
Cervical adenitis, treatment of, 557
Chancroid and chancre, 492
Chandler, Dr. Joseph H., dinner to, 317
Changes, pathological, in tissue under the influences of the X-ray, 685
Chapin, Henry Dwight, notes on the epidemic of cerebrospinal meningitis, 1063
Charges, physicians may vary, 133
Charitable institutions, 133
Charities report to the Commission of Lunacy, 225
Charity laws, bad State, 364
Charter, medical, perpetuating a, 1218
Charters for medical institutions, 1038
Chemical constitution and physiological action, relations between, 408
origin of the leucocyte in leucemia, 671
structure, is pharmacological action determined by, 72
Chemistry of blood coagulation, 407
of proteids, 988
of the urine, 1137
physical, versus biology, 856
physiological, 1181
Cheney, William Fitch, scurvy in infants, 1080
Chicago Medical and Orthopedic societies, 1048
Chicago's low death rate, 1182
Medical Society endorses emergency hospital, 662
Medical Society, 269, 509
Pasteur institute, work of the, 360
Policlinic, 1090
Surgical Society, 179, 426
Chickenpox concurrent with smallpox, 20
Childhood, management of fever in, 1153
Children, marantic, 56
Children's department for Provident hospital, 37
Homeopathic Hospital, 1218
Child, the demands of the, by virtue of right, 1150
Chlorides, urinary, 1141
Chlorine technic, the, 1214
thoughts on, 17
Chloroform in labor, 402
in surgical anesthesia, 845
Chloroma and eosinophilia, 955
comparative frequency of, 908
with leucemia, 997
Cholangitis, septic, common duct stone and, 1212
Cholecystitis and cholelithiasis, 794
with special reference to etiology and diagnosis, 423
Cholelithiasis and cholecystitis, 704
etiology of, 1187
surgical not medical, 1221
Cholemia, toxic agent of, 1083
Cholin in the cerebrospinal fluid in epilepsy, 453
Chorea, 1230
a fatal case of, 202
cases of hystero-epileptic, 653
Huntington's, case of, 810
Choreiform movements, 1231
Chorio-epithelioma malignum, primary, outside of the placental site, 1148
Christian Science and the law, 367
Church collection for hospitals, 850
Circulation, coronary, action of drugs on the, 359
equilibrium of, 1222
Cirrhosis, hypertrophic, in a child, 376
of the stomach, 753
City hospitals overcrowded, 226
Civil service examinations for the State and county service, 660, 808
Clark, C. G., differential diagnosis and treatment of chancroid and chancre, 402
Claude and Balthazard, the method of, 149
Clavicle, fracture of the, 30
Clemens, J. R., poisoning by the white of an egg, 746
Clements, Joseph, water anesthesia in surgery, and its suggestions in medicine, 1174
Climate in genito-urinary tuberculosis, the value of, 65
of Long Island, 280, 606
the effect of mountain and sea, upon man, 651
Climatotherapy and hygiene of towns, first French congress of, 464
Clinical aspect of chronic myocarditis, 880
Coagulation of blood, instrument for timing, of the blood and thrombosis, 715
Coagulum production, demonstration of, by growth of bacteria in sugar media, 1047
Coburn, Edward B., two appliances to facilitate eye and throat work, 1013
Cocainization, subarachnoid, present status of, 121
Coccygeal sinus, 663
Coccyx, glioma over the, 763
Coley, Thomas L., the dietetic treatment of arteriosclerosis, 292
William B., late results of X-ray treatment of sarcoma, 246
College athletics, some facts about, 506
of Physicians, 133, 176
College of Physicians and Surgeons, new scholarships for, 563
Colon bacillus of the kidney, 669
bacillus, ubiquity of, 670
Columbia and the College of Pharmacy, 363
University, 225
University notes, 507
Comment, sensible, 708
Congenital dislocation of the left hip—Lorenz method, 327
misplacement of the hip-joint in infancy, 44
Congress of Climatotherapy, First French, 135
of Polish physicians, 320
Conjunctiva, contagious inflammation of, 1228
Conjunctivitis of measles, bacteriology of, 659
Constipation, habitual, etiology of chronic, 981
in infants, treatment of, 215
Constitutional amendment, 1101
Consumption, a historical sketch of some of the so-called cures of, 688
and pneumonia, 612
cures, German, 79
cures, White Haven leads in, 133
from cattle, 1092
sanitaria in Canada, 1091
the control of, 133
the crusade against, 665
the history of, 274
Consumption's ravages, to check, 902
Consumptive poor, help for, 1218
Consumptives, Mr. Phipps gives $20,000 for a building for, 263
new sanatorium for, 228
quarantine for, in Australia, 191
Contagious diseases, decrease of, 1038
Control, the administrative, of tuberculosis, 337
Convalescent hospital, plans for, 708
Cook County Hospital, 37
Cook, Dr., president of police surgeons, 1036
Cooper-Hewitt light, high frequency currents and the, 1053
Copper in syphilis, 72
Cord as dilator, 859
Cornell University Medical College, 225
University Medical College commencement, 1179
Coroner's bill, the, 855
physicians, 1217
Costal arch, the behavior of, in diseases of the abdominal organs, 769
County Medical Society, officers of, 228
Medical Society, special lectures for, 1218
Craig, Charles F., rupture of the spleen; report of two cases, 780
Craniotomies, pneumatic tourniquets especial use in, 577
Creosote, carbonate of, in pneumonia, 170
Crile, George, summary of an experimental research into the use of alcohol, nitroglycerin and amyl nitrate in shock and collapse, with illustrative protocols, 887
Criminals and society, 566
Crippled Children's Hospital at Tarrytown, work of the, 226
Crothers, T. D., the danger of the use of opium in infancy, 1173
Croupous pneumonia, otitis media in, 726
Cryoscopy, 416
for exudates, 1130
of animal organs, 28
of urine, 149
Culture material, living, 999
Cumston, Charles Greene, the surgical treatment of acquired incontinence of urine in women, 109
Cumulative action of digitalis, 360
Cures, permanent, of Jacksonian epilepsy, 502
Curette, abuse of the uterine, 620
Curettage, hyperthyroidization following, 287
Currents, high frequency, encouraging results from, 1054
Cushing, Harvey, pneumatic tourniquets, with especial reference to their use in craniotomies, 577
Cushions, rubber, for general surgical, gynecological and obstetric use, 699
Cutaneous vessels, contraction of, 377
Cyclical albuminuria, 358
Cyst, congenital, of the fourth ventricle associated with brain tumor, two cases of, 332
pancreatic, 179, 379
traumatic pyeloparanephric, 441
Cystitis, acute, 169
the use of the cystoscope in, 424
value of albuminuria in differentiating pyelitis from, 32

Cystocele, new operation for, 1150
Cystoscope, a simplified, 425
its use in cystitis, 424
new, 669
not of universal applicability, the, 424
only recently the, has proved of practical service, 425
the use of the, 463
Cystoscopes, different, in service, 425
Cystoscopy, oxygen gas for, 747
Cysts and stones, pancreatic, 794
hydatid, in lungs and heart, 981
of the pancreas, 29
Cytotoxins, somatic, concerning the specificity of the, 763

Dana, Charles L., and J. Ramsay Hunt, tuberculosis of the spinal cord, with reports of cases of tuberculous myelitis and of tuberculous pachymeningitis, 673
Danger in salads, 944
Dangers of May moving, 756
Darlington, Dr. Thomas, Commissioner of Health of the City of New York, 130
Deaf and dumb asylum, report of New York, 1036
Deafness, tobacco nerve, 218
Death, another laboratory plague, 202
from acute circumscribed edema, 68
from fecal drowning during etherization, 581
rate, 525
rate and cold weather, 131
rate in April, 947
rate, New York's low, 36
rate since January 1, high, 611
sudden, during infancy, 456
Deaver, John B., abdominal versus vaginal hysterectomy, 249
Decalogue of health, a, 1096
Decapsulation, pathology of renal, 285
renal, in chronic nephritis, 520
Deceptive abdominal signs, 557
Deciduomata, extrauterine malignant, 166
Decrease of foundlings' mortality, 607
Defibrinated blood, 952
Deformity, congenital, of the neck, 429
of penis resulting from operations for relief of hypospadias, 623
pelvic, diagnosis and treatment of, 1149
Degeneration and alcoholism, 701
arterial, 1185
of arteries, 1186
of the spinal cord, 716
Delirium grave, a critical study, 334
Dementia præcox, 1232
Demonstration of the McGraw ligature, 405
Dennis, Frederic S., the mortality of appendicitis, 49
Dentists and physicians, 224
Departure, a useful, 758
Dermoid cyst and vesical calculus, 621
Desquamation in scarlet fever, 752
Detention hospital, 78
Determining the strength of digitalis leaves, 558
Detroit doctors at Stearns' laboratories, 805
Diabetes as complication of pregnancy, 167
behavior of proteids in, 209
diagnosis of, 69
dietetics in the treatment of, 271
excretion of oxalic acid, etc., in, 701
insimidus, 523, 952
insipidus and tuberculosis, 952
insipidus not rare, 952
insipidus under two years of age, 523
mellitus, 212
mellitus, report on the metabolism of a case of, 1102
pancreatic, 236, 237
physiologic chemistry of, 236
pneumonia in, 431
symposium on, 236
Diabetic coma, the acetone-content of the organs in cases dead from, 937
diet, mathematics of the, 843
Diabetics, improvements in dietetic, 749
Diagnosis and course of bronchopneumonia in children, 817
and treatment of intussusception, 404
and treatment of syphilis, 494
differential and localizing, 235
early, of pulmonary tuberculosis, 682
in typhoid fever, 5
laboratory aids to, 259
of appendicitis, 1147
of diabetes, 69
of gall-bladder diseases, 59
of general paresis, 679
of pulmonary insufficiency, 843
Roentgen rays in, 425
Diarrhea in children, 1229
infantile, with urinalysis in, 56
summer, bacteriology of, 1228
Diastolic murmur in diagnosis, the, 873
Diazo and Widal reactions in typhoid fever, 1082
Dietetic treatment of arteriosclerosis, the, 292
Differential diagnosis, 911
Difficulty of locating bleeding point, 1140
Digestion, starch, in infancy, 214
tryptic, resistance of serum proteids to, 71
Digitalis, 575
and nitroglycerin, 378
cumulative action of, 360
dangers of, 1186
in heart disease, 1177
leaves, determining the strength of, 558
limitations of, 1185
upon the heart, action of, 359
Dilatation, acute, of the heart, 67
record esophageal, 954
Dilator, a new cervical, 166
Diller, Theodore, a severe case of major hysteria (traumatic neurosis) following an accident; recurrence of symptoms after a second accident; absence of damage claims in both instances, 935
Dinner, annual reunion and, 413
Diphtheria and antitoxin, 367
and bronchopneumonia, 524
antitoxin, exanthemata following the injection of, 456
bacilli, new stain for, 498
mortality of, 415
the value of antitoxin as a prophylactic in, 215
toxin, action of, upon circulation, 166
transmissible by water, is? 937
Direct heart massage, 655
Disability, permanent, 950
Disease and immigration, 508
and wild animals, 616
blood in malignant, 125
duration of the, 1138
infectious, 176
the sun as a cause of, 449
Diseases, hemorrhagic, 114
in children, hemorrhagic, 619
infectious, among negroes, 60
nervous, are they increasing? 1213
of the biliary passages, 29
of the bladder, the internal treatment of, 399
of the eye, some external, due to rheumatism, 777
Disinfect empty houses, to, 900
Disinfection, a new soap for, 504
of German libraries, 274
Dislocation, congenital, of the left hip, 327
femoral, 328
of the ulnar nerve, 31
Dislocations, old unreduced, 1192
Dispensaries, plan to combine, 610
Dispensary for Paterson, N. J., a, 851
Dismissal of medical student upheld in court, 228
Dissemination of disease, the theatrical profession as a factor in the, 551
Distribution of bacillus coli in nature, 939
Diverticulum, Meckel's, strangulated, 163
Dock, George, prognosis: its theory and practice, 1116
Doctors' income in London, 1040
in parliament, 665
Dogs, nurses for sick, 368
to muzzle, 228
Donation of $75,000 to the Maurice Porter Hospital, 994
Douche tube, prostatic, 519
Dougherty, Dr. C. E., 1091
Douglas, Richard, the significance of pus and blood in the urine, 541
Drainage and flushing, intrauterine, 450
artificial bladder, counter-opening in the vagina for, 1052
canal, 710
necessity of, 1145
perineal, 668
suprapubic, 669
Drains and drainage adjuncts, varieties of, 41
Dropsy as a symptom, importance of, 142, 649
non-medicinal treatment of, 143
Drug habit cases, ergot in, 445
Drugs, 525
control of internal hemorrhage by, 1199
federal supervision of, 1198
hypnotic, in mental disease, 1199
rational and empiric use of, 1095
Ductus Botalli, rare form of persistent, 359
Dugan, Dr., appointment of, 1218
Dunning staff, 710
Dunton, William Rush, Jr., a new slide box; also a method of recording embedded tissue, 1210
new buildings for, 37
Duodenum, the treatment of posterior perforations of the fixed portions of the, 423
Duration of action, 949
Dysentery, amebic, 1222
and typhoid, studies on, 701
bacilli, 900
chronic, olive oil in the treatment of, 651
infantile, 1228
Dysmenorrhea, spurious, 43
Dystocia, embryotomy as applied in transverse, 168

Ears, gouty deposits in the, 1083
East Side Physicians' Association, 175, 563
Eastern Medical Library opening, 507
Eccles, R. G., the sanitary aspect of food preservatives, 304
Eck's fistula, 715
Eclampsia and the liver, 1224
maternal, fetal thyroid hypertrophy with, 986
modern theories of, 312
puerperal, successfully treated by renal decapsulation, 1101
the blood and urine in, 310
Economics and typhoid, 172
physical, the scope of, 838
Eczema, bacteriology of, 449
infantile, 220
Edebohls' operation, 286
Edema, death from acute circumscribed, 68
pulmonary, 1141

Editorials—
Acute osteomyelitis, 1034
Albumoses and peptones, 173
American Medical Association, the, 1131
Appendicitis, present status of, 74
Are excitation, inhibition and narcosis different phases of the same activity? 361
Aspect of the alcohol problem, a novel, 459
Association of American Physicians, the, 941
"As through a glass—darkly," 560
Athletics, college, some facts about, 506
Automobiling and nervous manifestations, 34
Autopsies in public hospitals, 459
Babies and hot weather, 1033
Bends and the "sandhogs," the (Caisson disease), 128
Blood pressure in surgical cases, 703
Cancer research fund (English), report of the, 1088
Carcinoma, pyloric, surgical treatment of, 608
Cirrhosis of the stomach, 753
Cystin, 410
Decrease of foundlings' mortality, 607
Dentists and physicians, 224
Digitalis in heart disease, 1177
Direct heart massage, 655
Economics and typhoid, 172
Eosinophilic leucocyte in septic infections, the, 505
Facial neuralgia, 609
Fever, typhoid, 222
responsibility for, 33
Fish-eating and leprosy, 409
Florida enchantment, a, 656
Food substitution, 1215
Frequency of lead poisoning, 991
Function of the eosinophile, the, 989
Gastric dilatation and tetany, 943
surgery, the possibilities of, 221
Halliburton's, Prof., lectures and nerve regeneration, 174
"How we apples swim," 80
Immunity to rattlesnake poison, 942
Important medical legislation, 266
Infant mortality and foundling care, 751
Inflammation of the omentum, 990
"In hoc signo" (desquamation in scarlet fever), 752
Insanitary nuisances and legal procedure, 127
Isolation of typhoid germs, 1132
Kalk Metastasen, 505
Law and the criminal, the, 848
"Lead, kindly light," 1085
Lead poisoning, frequency of, 991
Leprosy and fish-eating once more, 409
Long bacillus of the stomach contents, the, 658
Lungs of New York, the, 559
Maragliano's vaccination, 659

Neoplasms, non-malignant, of the thyroid gland, with metastases, 1217
Nephritis, operation for, 362
Nerve regeneration, 174
Nerve surgery for the relief of palsies, 849
Neuralgia, facial, 609
New Bellevue, the, 895
outlook in therapeutics, a, 897
New York's insane, 799
oysters and typhoid fever, 1178
Omentum, inflammation of the, 990
Osteomyelitis, acute, 1034
Panama Commission and prophylactic medicine, the, 458
Patent medicine curse, the, 1086
Pathology and surgery of the pancreas, 704
Patient-physician-pharmacist, 1034
Peptones and albumoses, 173
Pharmacy and medicine, 562
Phillips and company, 411
Physicians as heads of municipal departments, 73
and dentists, 224
Possibilities of gastric surgery, the, 221
Pulmonary syphilis, 314
Rabbit lope, the, 313
Renal decortication versus section, 847
Rôle of the pancreas in carbohydrate metabolism, 129
Scrum treatment of tuberculosis, 896
Society of sanitary and moral prophylaxis, 1087
Splenic diseases, surgical treatment of, 171
State Medical Society, annual meeting of the, 223
Surgical treatment of splenic diseases, 171
treatment of pyloric carcinoma, 608
intervention in typhoid perforation, 267
Syphilis in our colonies, 265
pulmonary, 314
Tuberculosis Congress, the, 1132
Typhoid and economics, 172
fever, 222
cost of the Philippines, the, 35
in Germany, 457
perforation, surgical intervention in, 267
Twentieth century professors, 75
Ultramicroscopy, 801
Vaccination once more, 315
Variola, 706

Education, general, and professional education, conflicting claims of, 237
medical, some aspects of, 1105
medical, the endowment of, 713
Effects of altitude on blood corpuscles and blood plates, 383
of water and food on gastric secretion, 213
Egg, poisoning by, 996
poisoning by the white of an, 746
unfertilized, potassium cyanide upon, the, 239
Ehrlich, Dr. Paul, reception to, 754
Paul, physical chemistry versus biology in the doctrines of immunity, 856
Elastic tissue in the spleen, 455
Electrolytes on the action of amylolytic ferments, the influence of, 123
Electrothermic clamps, 1148
Electrothermo cautery, 474
Elgin botanical gardens, the, 471
Eligibility to membership, 1101
Eliot, Ellsworth, Jr., pathology and treatment of simple fracture of the patella, 1124
the behavior of the costal arch in diseases of the abdominal organs and its importance as a diagnostic symptom, 769, 825
Elliott, Dr. C. R., 1091
Elsner, Henry L., anomalies and difficulties of diagnosis in typhoid fever, 5
Embolism, air, 215
Embryotomy as applied in transverse dystocia, 168
Empyema, 1103
in infancy, diagnosis of, 940
Encephalitis, edematous, 40
Endocarditis, 202
after adenoid operations, 518
complicating, 1001
experimental, 1001
experimental inoculation of, 455
Endometritis, membranous, 1196
Enema, new nutrient, 220
Enterocele, partial, 501
Enterostomy, 718
Entropium of the upper lid, the evolution of the modern operation for, 994
Enucleation and iridectomy, 1005
Enuresis, 1228
and masturbation, 235
nocturnal and diurnal, 235
Enuresis, pathological basis of, 235
Enzyme, on the absence of a cane sugar inverting, in the stomach, 239
Eosinophile cells during infection with an animal parasite, an experimental study of the, 572
cells in sputum, 450
life, conclusions as to, 907
the function of the, 989
Eosinophiles and bacterial infection, 997
during experimental trichinous infection, 671
fate of the, 997
formation of, in the hemolymph nodes, 810
life history of, 997
study of, 997
Eosinophilia and chloroma, 955
Eosinophilic leucocyte in septic infections, the, 505
Epidemic, pneumonia, in New York, 36
Epidemics, typhoid fever, the management of, 1
Epididymis, obstruction at the, 32
Epididymitis, treatment of, 288
Epigastrium, pain in the, 538
Epilepsy, fracture of the base of the skull as a cause of, 979
in a canary bird, 1002
Jacksonian, of luetic origin, 812
Jacksonian, permanent cures of, 502
musical equivalent of, 452
pathogenesis of, 72
prognosis of, 1129
progressive myoclonus, 213
puerperal eclampsia, etc., relation of the internal secretions to, 1199
Roentgen rays in the treatment of, 425
surgical treatment of, 893
the blood in, 454
the presence and significance of cholin in the cerebro-spinal fluid in, 453
treatment of, 220
Epileptiform convulsions, the source of tonic and clonic, 804
Epiplopexy, 448
Equation, the individual, of the patient in surgical operations, 529
Equilibrium of circulation, 1222
Equivalent of epilepsy, musical, 452
Erdmann, A. F., ethyl chloride as a general anesthetic, 1024
John F., surgery of the gall-bladder and ducts, 587
Ergot in alcoholism, morphinism, etc., 445
in general practice, 1222
in heart disease, 1186
Erysipelas, 958
colloidal silver in, 121
Erythema nodosum in children, 1151
Eshner, Augustus A., a fatal case of chorea complicated by endocarditis, pericarditis and nephritis, 202
Esophagotomy, unavoidable external, for the extraction of a foreign body, 1213
Esophagus, dilatation of the, 954
gastric mucous membrane in the, 455
in deviations of the vertebral column, the, 502
obscure stricture of, 857
spasmodic stricture of, 954
Estes, W. L., the individual equation of the patient in surgical operations, 529
Estimation of sugar in urine, volumetric, 498
Etherization, death from fecal drowning during, 581
Ethyl chloride as a general anesthetic, 1024
chloride in gynecology, 984
Etiological relation between trauma and tabes, the, 580
Etiology of exophthalmos, 952
of gout and its treatment, 404
of rachitis, 301
Eumydrin, a new mydriatic, 219
Eustrongylus gigas, infection with, 209
Examination for Army medical service, 319
in the Province of Quebec, bill to relieve medical students from, 901
medical, result of, 78
Examinations at Brooklyn Hospital, 609
civil service, 268
hospital, dates for, 609
Examining board, personnel of, 710
Exanthemata following the injection of diphtheria antitoxin, 456
Excitation, inhibition and narcosis, are they different phases of the same activity? 361
Excursions in old New York medicine—IV, 471
Exfoliative endometritis, etiology of, 230
Exhibits at Atlantic City, the, 1183
Exoneration of Bellevue, 413
Exophthalmos, etiology of, 952
pulsating, 798
Expectoration on sidewalks, no more, 317
Experimental inoculation of endocarditis, 455
pathology of the liver, 456
Expert, status of the medical, 238
Extermination of mosquitos, 513
Extrauterine pregnancy, 450
Exudates and transudates, 804
cryoscopy for, 1130
Exudations, pelvic, 167
Eye and Ear Infirmary, gift to, 708
Ear, Nose and Throat College, (Chicago) directors and officers, 901
and throat work, two appliances to facilitate, 1013
aspects, forensic, of tabes, 555
muscles and others, 280
some external diseases of the, 287
some external diseases of the, due to rheumatism, 777
staphylomatous, rupture of the sclerotic in a, 219

FACTS about college athletics, some, 506
Farm inspection, 1039
Fat-assimilating function of the human placenta, the, 407
embolism of lung, 1194
Fat necrosis, multiple, 449
Fatigue, toxins and antitoxins of, 454
Fats by platinum black, the hydrolysis and synthesis of, 212
Fatty degeneration, nature of, 126
Faure, Dr., entertained, 756
Fecal drowning during etherization, death from, 581
impaction following labor, 90
incontinence treated by injections of paraffin, 890
Feces, icteric, crystals in, 1130
presence of albumin in the, 795
Feeding, subcutaneous, 750
Ferments, amylolytic, 123
in the urine, 1130
Fetal heart murmurs in gravida, 358
thyroid hypertrophy with maternal eclampsia, 986
Fever, blackwater, etiology and pathogenesis of, 210
cerebrospinal, of the epidemic type, 1065
glycogen in, 125
hay, serum treatment of, 798
in childhood, management of, 1153
Mediterranean, a possible new form of, 795
puerperal, treatment of, 312
scarlet, blood examination in, 125
strychnine in, 951
treatment of, 525
typhoid, 222
typhoid, anomalies and difficulties of diagnosis in, 5
typhoid, efforts to prevent and suppress, 367
typhoid, responsibility for, 33
typhoid, the management of epidemics, 1
yellow, 211
Fevers, aseptic, the alloxuric bases in, 606
Fibrils, neuroglia, myoglia and fibroglia, 717
Fibroid disease in five sisters, 605
Fibroids, recurrent, of the uterus, 983
Fibromata of the anterior abdominal wall, 167
Filaria perstans, anatomical characteristics of, 795
Filariasis, 565
cured by removal of the adult worms by operation, 164
Filters to lower typhoid rate, 661
Finsen laboratory to be erected, 1133
Fire in dental college, 462
First aid instruction to employees, 757
Fistula, Eck's, 715
left bronchial, 663
Flick, Lawrence F., house infection of tuberculosis, 345
Flies and typhoid, 320
Florida enchantment, a, 656
Medical Association, 902
Flower Hospital's physical therapy clinic, 364
Fluid of a pleural effusion, some peculiar changes in the, 1048
required in the bladder, amount of, 425
Fluids, ultramicroscopic examination of, 126
Fluorescence experiments, 940
Fluorescin, the value of, with a research into its properties, 835

Fluorescing substances, properties of, 170
Flushing and drainage, intrauterine, 450
Food adulteration in New York State, 175
preservatives, sanitary aspect of, 304
pure, national legislation for, 272
substitution, 1215
Foramen ovale, a patent, 374
Foreign bodies in the bronchi, 556
body in the vagina, a rare case of a, 985
Forel, Prof. August, statement by, 902
Foundlings' mortality, decrease of, 607
Fourth of July, provide for, victims, 1039
Fowler, Russell S., results in diffuse septic peritonitis treated by the head and trunk position, 1011
Fracture, compound comminuted, 1048
compound, of the patella and condyles, 901
dislocation of the spine, 41
intercondyle, 1049
multiple pelvic, with rupture of urethra and bladder, 527
of the base of the skull as a cause of epilepsy, 979
of the lower extremity, ambulatory treatment of, 890
of the neck of the femur, new treatment for, 891
of the patella, 1124, 1193
Fractures of the neck of the femur, 1194
of the patella, pathology and treatment of recent, 494
Frankford Hospital, 709
Freeman, Dr., address by, 946
Fremitus, some notes on vocal, 1009
French Hospital, 1217
Frenum preputii, excision of the, 19
Frequency of gout, 323
of lead poisoning, 991
Fresh air a panacea, 526
air retreat, Director Martin to establish, 709
Friends' Asylum, Frankford, 850
Function of the eosinophile, the, 989

Galactagogue, new, 504
Galactocele, a case of, 756
Gallant, A. Ernest, postpartum tubo-ovarian abscess causing hydronephrois, 1023
Gallaudet, Bern B., traumatic pyeloparanephric cyst, 441
Gall-bladder and ducts, surgery of the, 587
cases, subsequent history of, 1083
disease, non-surgical, 1222
disease, surgical diagnosis of, 1188
diseases, diagnosis of, 59
pain, 1221
stomach and intestines, the, 1187
surgery, 500
Gall-stone a foreign body, 1221
Gall-stones and the intestines, 1188
and metabolism, 1221
diagnosis and treatment of, 43
in the common duct, 1147
surgery of, 1189
surgical treatment of, 558
the treatment of, 1097
Ganglia, cardiac, the question concerning the existence of, 125
Ganglion, spinal, relation of posterior nerve-root to, 797
Gangrene of the hollow viscera, 1083
Gartner's canal, tumors of, 166
Gastric analysis, indicators in, 597
atrophy and pernicious anemia, 1139
dilatation and tetany, 943
disease, simulation of, 1222
juice, titration of, 211
secretion, effect of water and food on, 213
secretion, influence of salt on, 455
ulcer, etiology, symptomatology, and diagnosis of, 380
ulcer, perforating, 380
ulcer, treatment of, 380, 408
Gastrodiaphany, or transillumination of the stomach, 956
Gastro-enteritis, acid creamless milk in, 214
of nurslings, condition of the kidneys in, 795
Gastro-enterostomy by crushing, 1146
for supposed carcinoma, 946
the modification of Mattoli in the operation of Von Hacker for, 919
twine in lieu of the elastic ligature for performing, 1145
without a loop, 641
Gastroptosis, 162, 718
and the methods of physical diagnosis, 955, 957
surgical treatment of, 122
Generative cycle of woman, the, 984
Genito-urinary affections, with involvement of the kidneys, 668
Genito-urinary tuberculosis, 65, 500
work, four years of, 1161
German Hospital appointments, 225
Hospital, gift to, 708
Germs, intestinal, differentiation between typhoid and other, 217
Gestation, ectopic, with atypical symptoms, 1194
Gies, Dr., promotion of, 316
Gift to Eye and Ear Infirmary, 708
to German Hospital, 708
Gland, parathyroid, 215
parotid, tumor of the, 671
Glands, suprarenal, 124
Glaucoma, 1005
course of, 280
diagnosis of, 280
Glioma of the Sella turcica, case of, 807
over the coccyx, 763
Gloves, rubber, substitute for, 651
Glycogen formation, abnormality of, 236
from proteid, origin of, 213
in fever, 125
in leucocytes, 780
reaction of leucocytes, 216
reaction of leucocytes in tuberculosis, 917
Glycolysis, the problem of, 701
Glycosuria, diabetes and non-diabetic, 237
Goiter, the surgical treatment of, 382, 1084
Goiter, unilateral right-sided, 1103
Gonococcus metastasis, 845
Gonorrhea, 98
and the general practitioner, 1227
in the male, 488
in the puerperium, 986
X-ray in circumscribed peri-urethral, 72
Gonorrheic infections, the local treatment of, 860
Goodman, Edward H., a case of strangulated inguinal hernia: death from fecal drowning during etherization, 581
Gorgas, Dr., appointment of, 475
for canal commissioner, 463
Gout and toxemia, 324
clinical and chemical, 323
diet in, 323
etiology and pathology of, 1199
etiology of, and its treatment, 404
frequency of, 323
latent, 324
nervous elements in, 324
relation of uric acid to, 815
sodium phosphate in, 324
two cases of, in negroes, 815
Goutiness, 322
Gouty deposits in the ears, diagnosis of, 1083
Gouverneur, clinical assistants at, 460
Governor's message, the, 132
Graduate Nurses' Association, 900
Grafting, ovarian, 311
Gravida, fetal heart murmurs in, 358
Great Britain, lunacy in, 512
Griffith, Frederic, instrument hanger for glass-shelved cases, 555
Grip, cerebral form of, 661
Growths, free, in the tunica vaginalis, 47
Guest, official, of A. M. A., 1180
Gunshot wound of the brain, 281
wound of the olecranon process, 1048
Gut, obstruction of the large, 406
Gynecological diseases, mistaken, 1195
Gynecology, ethyl chloride in, 984

Hahnemann Medical College, 1022
Medical College, offer of, to State University, 1182
Halliburton, Dr., lectures by, 175
Halliburton's, Professor, lectures and nerve regeneration, 174
Hanish, prosecution of, 1134
Hamot's disease, surgical interference in, 121
Harmony in New York State, 130, 136
Harris, Dr. J. W., 1091
Hartford hospital, funds for the, 948
Harvard Medical School's infirmary, addition to, 852
Medical Society of New York City, 322, 517, 668, 857
Harvey Medical College, offer to State University of, 1182
Hay fever, antitoxine treatment of, 219
fever, serum treatment of, 708
Hays, Harold M., a history of saliva, its physiology, chemistry and pathology, 582
Head holder, new, for rabbits, 239
injuries, the after-effects of, 747, 889
Heads of municipal departments, physicians as, 73
Health, a decalogue of, 1096
camps, sites for, 415
Health Department appointment, 754
inspectors, 565
public, and winter weather, 510
report, 946
resort, an arctic, 367
Heart, action of digitalis upon, 359
acute dilatation of the, 67
disease an obstetric complication, 1149
disease, digitalis in, 1177
disease, pleural effusion in, 1185
influence of the nerves upon the artificially revived, 124
massage, direct, 655
patient with sutured, leaves hospital, 835
suture of the, 509
valvular disease of the, 533
Helmuth, Dr., bust of, 945
Hemangioma of the orbit, lymph-nodes in, 810
Hemangiosarcoma of the skin of the finger, 808
Hematemesis, treatment of, by gastro-enterostomy, 381
two cases of acute, 381
Hematoma, intrapelvic, following labor, 182
Hematuria, case of, 621
in infantile scurvy, 1229
unilateral, renal decapsulation for, 749
Hemiatrophy, facial, a case of, 1002
Hemichoria, localization of, 215
Hemiplegia, flaccid luetic, with atrophies, 811
postdiphtheritic, 331
Hemiplegics, superior intercostals in, the movements of the, 1129
Hemoglobinuria, paroxysmal, due to cold, 747
Hemolymph nodes in adipose tissue, development of, 938
nodes, the occurrence of myeloid changes in the, 810
Hemolymphotoxin, 810
Hemolysis in human urine, 716
the relation of eosinophiles to, 810
Hemoptysis, parasitic, 763
Hemorrhage, cerebral, 335
death from, following premature labor, 90
operation for, 1140
source of, 235
Hemorrhages from the ovary, 985
Hemorrhagic conditions, 425
diseases in children, 619
Hemorrhoids, internal, the diagnosis and treatment of, 395, 473
Hemostatic bandage, an improved, 407
Henoch's purpura, etiology of, 377
Hepatectomy for tuberculoma of the liver, 727
Hernia, 710
autoplastic suture for, 1190
inguinal, the anatomy of, 1189
in infancy, 1230
of the genital organs into the inguinal canal, 310
radical cure of femoral, 890
relief of various forms of, 500
strangulated inguinal, 581
Hernias, incarcerated, use of atropine in, 170
High frequency currents more efficient than the X-ray, 1055
Highly creditable showing for New York, a, 77
Hinsdale, Dr., dinner to, 268
Hip, congenitally dislocated, results of the bloodless replacements of, 766
Hirshberg, Leonard K., the pathological exhibit at the tuberculosis exposition, Baltimore, 277
Historical sketch of some of the so-called cures for consumption, a, 688
Hollis, Austin W., the diastolic murmur in diagnosis, 873
Home for convalescent children given to orthopedic, 225
treatment of the tuberculous, 645
Homeopathic Hospital, Children's, 1218
Homeopaths, city hospital for, 1077
Honorary membership and retirement, 949
Honor founder of hospital, 947
to medical men, 1137
Hookworm disease and miners' anemia, 785
Hospital appointments, 660, 754, 803, 850, 900, 945, 948
at Butler to be discontinued, 78
bequests, 176
big sum for new, 1039
car, 285
dedicated, 1218
deficits, large, 946
examinations, dates for, 609
experience, 816
for children, new, 269

Hospital for infectious diseases, opposition to the location for the erection of, 901
land for, 804
positions, 944
to rebuild, 176
Hospitals at their fullest, 660
bequests to, 1217
books for the, 175
inspection of, 228
millions for improvement of, 709
must comply with building ordinance, 317
public, autopsies in, 459, 570
seek new law, 567
under construction, 613
Hour-glass stomach, 406
Hours for bakers, 414
House infection of tuberculosis, 345
Howard, William Lee, some subjective hints of the morphine habit, 113
Howland, John, the pathological anatomy of Shiga bacillus infection of the intestines in infants, 433
"How we apples swim" (advocacy of apple diet), 800
Human actinomycosis, cause of, 216
blood, new method of identifying, 619
Huntington's chorea, case of, 810
Hutchinson, Dr., on hospital staff, 1133
Hydatid disease in Australia, notes on, 181
Hydatiform mole, 451
Hydramnion, the experimental production of, 984
Hydrastis, some of its therapeutic uses, 1200
Hydrochloric acid a luxury, 1138
large doses of, 1139
on pepsin in stomach, influence of, 844
supplied, 1139
Hydrolysis and synthesis of fats by platinum black, the, 212
Hydronephrosis, abscess causing, 1023
Hydrophobia, 1134
caution against, 710
Hydrotherapy, physiological and clinical aspects of, 599
Hygiene, the nerve, of school children, 947
to train Ontario teachers in, 319
Hygienic measures, 378
treatment, 525
Hyperchlorhydria, diet in, 270
Hyperemia, new appliances for local, 604
Hypernephroma, 181
Hyperplasia of the pharyngeal tonsil, 218
Hypertension, chronic arterial, 1199
Hyperthyroidization following curettage, 287
Hypertrophy of the prostate gland, 789
prostatic, 425, 791
senile, of the prostate, 186
treatment of prostatic, 39
Hypochondriac, Herbert Spencer as a, 513
Hypospadia, penal, 662
Hysterectomy, abdominal, 169
abdominal versus vaginal, 249, 983
Hysteria and organic disease, 739
major, a severe case of, 935
prolonged, 953

IBSEN and psychopathology, 1097
Idiocy, amaurotic family, 716
Illegal practitioners, 946
Illoway, H., thrush, 396
Illuminating gas poisoning, 951
Immigration and disease, 508
and insanity, 564
Immune sera, dried, 455
Immunity to rattlesnake poison, 942
Immunization against tuberculosis, 650
Importance of dropsy, the, as a symptom, 649
Incontinence of urine in women, the surgical treatment of acquired, 109
Increased dues, 949
Increase of medical corps, 417
Incurables, home for, 754
India, plague in, 515
Indians, insanity among American, 38
Individual equation of the patient in surgical operations, the, 529
Individuality of treatment, 379
Infancy, opium in, the danger of the use of, 1173
starch digestion in, 214
sudden death during, 456
Infantile eczema, 220
Infant mortality and foundling care, 751
Infants, intelligent care of, in summer, 710
scurvy in, 1080
Infantum, xanthoma, 180
Infection and immunity, Prof. Loeb's studies in, 463
and immunity, some considerations on, 1057
Infection, ascending, 870
house, of tuberculosis, 345
intestinal, a clinical study of 62 cases, 481
microbic, 1220
retroperitoneal, 46
Staphylococcus aureus, 282
Infections, bacterial versus animal parasitic, 997
Infectious disease, elastic tissue of liver in, 165
diseases in the Bronx, 563
diseases in the Philippines, study of, 274
diseases, neutrophile leucocytes, 605
Inferior maxilla, splint for treatment of fracture of the, 396
Infirmary for women and children, fiftieth anniversary of the New York, 76
Inflammation of the omentum, 990
Inflammations, acute and chronic, of the sigmoid flexure, 449
pelvic, 46
Influenza, 415
cerebrospinal, 894
Ingersoll lecture, 319
Inhibitory action of toxins, 858
Injections, subconjunctival, in ophthalmic therapeutics, 218
Injuries, head, the after-effects of, 747
Inoculation of anthropoid apes with syphilis, 217
Inoculations, preventive, 1137
Insane hospitals, defense of, 993
music for the, 804, 994
Odell's care of the, 460
Insanity among American Indians, 38
and immigration, 564
campaign against, 1232
Inspection, medical, of schools instituted, 709
of hospitals, 228
of school children, 612
of the laboratories, 1181
school, 176
Inspectors, assistant medical, 268
Institution for treatment of infectious disease, 176
Instruction, laboratory, 1181
Instrument, a new, 1175
hanger for glass-shelved cases, 555
Insufficiency of the pylorus, 236
Insurance, life, arteriosclerosis in its relation to, 947
International Congress of Ophthalmology in Luzerne, 664
Tuberculosis Congress, 1092
Interneship, hospital, 707
Interscapulothoracic amputation for sarcoma, 145
Inter-State indorsement vs. Inter-State reciprocity in medical licenses, 1219
Intestinal anastomosis, 40, 199
indigestion and gout, 323
perforation in typhoid fever, 382
union, new method of, 31
Intestine, cancer of the, 975
small, lymphatic varices of the, 940
Intestines, rupture of the, 857
Intranasal operation, after-treatment of, 164
Intraspinal injection of lysol solution, 913
Intussusception, chronic, excision of 42 inches of small intestines for, 163
diagnosis and treatment of, 404
Inversion, complete, of the viscera, 987
Inversio uteri of puerperal origin, 702
Investigation of cities by State board of health, 79
Iodide of potassium in lobar pneumonia, 982
Iodine and mercury to combat local infections, 1201
organic, the action of, 750
Iodism, prevention of, 218
Iowa hospital for drunkards, 614
Iridectomy, enucleation and, 1005
Iris diaphragm, inventor of, 229
Iron, physiological therapeutics of, 234
Iroquois Hospital plan, 611
Memorial Hospital, necessity for, 662
Irritability in nerves, post-mortem, 538
Irritation, unsuspected, of internal abdominal ring, 953
Ischemia, spinal, 953
Ischuria in retroflexion of the gravid uterus, 702
Islands of Langerhans, 236
of Langerhans, development of the, 217
Isolation of typhoid germs, 1132
Is substitution legalized? 1040
Italian hospital, new, 981

JACKSONIAN epilepsy, permanent cures of, 502
Japanese army, the medical service of the, 469
biologists, 712
Japan, local nurses go to, 462
volunteer surgeons for, 413
Japan's medical service, 229
Jaundice, the influence of, 204
typhoid agglutination in, 844
Jaw, actinomycosis of, 179
Jefferson Hospital, 1217
Medical College, 1038
Johns Hopkins Hospital, loss to, 510
Hospital, $500,000 donated to, to offset loss by Baltimore fire, 713
Hospital Medical Society, the, 181, 383, 431, 526, 670, 815
University, 664
Johnson, Alexander B., some remarks on tuberculosis of the urinary bladder, 924
Joint Committee for Consolidation, progress of the, 944
committee report, 234
Joint disease, syphilitic, 430
Journal of Children's Diseases, British, 135

KALAMAZOO Academy of Medicine, 177
hospital, 1092
Kalish, Richard, some external diseases of the eye due to rheumatism, 777
Keefe, John W., a new method for performing intestinal anastomosis, 199
Kelly, Howard A., rubber cushions for general surgical, gynecological and obstetric use, 699
Keloid treated by X-rays, 179
Kemp, Robert Coleman, a new method for transillumination of the stomach by means of fluorescent media: the value of fluorescin with a research into its properties, 835
Kidney cases, some observations on, 747
colon bacillus of the, 669
decapsulation of the, for Brigbt's disease, 427
decortication, 670
diagnosis in surgical diseases of the, 366, 463
disease, opotherapy in, 456
experimental study of decapsulation of the, 717
influence of trauma in movable, 498
method of suturing the prolapsed, 162
movable, 651
pathology, transitional stage in, 669
polycystic, 181
specimen of a tuberculous, 86
stone, diagnosis and treatment, 1192
substance, restoration of, 285
suppurating, extirpation of, 851
the medical aspects of decapsulation of the, for the cure of chronic Bright's disease, 426
tuberculosis of the, nephrectomy for, 1099
Kidneys, drugs irritant to the, 1199
in gastro-enteritis of nurslings, condition of the, 795
the relations between the activity of skin and, 650
Kiernan, James G., forensic eye aspects of tabes, 555
Kill a pneumonia patient, how to, 525
Kime, J. W., bovine tuberculosis, 158
Knapp, Clinton B., splint for treatment of fracture of the inferior maxilla, 396
Knee-joint, lesions around the, 281
multiple loose bodies in the, 421
pathology of the, 1145
Kolalin, 1098
Koplik, Henry, the clinical features of cerebrospinal meningitis, or cerebrospinal fever of the epidemic type, 1065
spots in measles, occurrence of, 450
Kreider, Dr., resignation of, 757

LABORATORY aids to diagnosis, 259
building, new, of New York University, 1179
Labor, chloroform in, 402
hematoma following, 182
normal, considered from a surgical standpoint, 693
rupture of the uterus during, 451
the beginning of, 984
Labyrinthine suppuration, 503
Lacerations, pelvic floor, repair of, 1150
perineal, treatment of, 168

Lacrimal canal, congenital occlusion of, 1228
La Fétra, Linnæus Edford and John Howland, a clinical study of 62 cases of intestinal infection by the *Bacillus dysenteriæ* (Shiga) in infants, 481
Laking of red blood cells, 71
Laminectomy, 1191
for an intradural spinal tumor, 527
Land for hospital, 804
Landry's paralysis, 1229
Langerhans, islands of, 217, 237
Laparotomy for gun-shot wound, 474
technic of wounds incident to, 1149
Laryngitis, chronic, 278
Law and the criminal, the, 848
Christian Science and the, 367
hospitals seek new, 566
vaccination, needed, 709
Laws, bad State charity, 364
Lead and arteriosclerosis, 1142
as a cause of gout, 323
poisoning, frequency of, 991
poisoning, urine in, 844
"Lead, kindly light" (dentistry and asphyxiation), 1085
Lectures by Dr. Halliburton, 175
special, for the County Medical Society, 1218
to school teachers, 317
Lederle, Dr., retained, 131
Lederle's, Dr., new venture, 754
LeFevre, Egbert, management and treatment of typhoid fever, 11
Lefferts, Dr., resignation of, 1089
Prof., farewell lecture, 660
Left-sided paralysis, 527
Legislation, important medical, 266
Lens, crystalline, removal of the, 1005
Leonard, Charles Lester, the diagnostic value of the Roentgen rays, 62
Leper to be returned to Hawaii, 611
Lesions around the knee-joint, 281
Leucemia, acute hemorrhagic, 565
chemical origin of the leucocyte in, 671
lymphatic, blood from cases of, 907
myelogenous, 431
scorbutic, similarity of, 998
splenomedullary, 1176
with chloroma, 997
Leucocyte counts, differential, stain applicable to, 717
counts, value of, during the course of typhoid fever, 982
Leucocytes, glycogen in, 780
glycogen reaction of, 216
in tuberculosis, glycogen reaction of, 917
neutrophile, 605
Leucocytosis, a macroscopic test for, 937
in appendicitis, 81
toxic, experimental, 988
Levien, Henry, home treatment of the tuberculous "is just as good"—but it is not, 645
Lewi, Dr. M. J., 316
Libman, E., notes on the Widal reaction: (1) the question of dilution; (2) the influence of jaundice, 204
Libraries, disinfection of German, 274
Library, medical, for Maryland, 273
License of dogs and cats, proposed change in, 610
Licenses, medical, inter-State indorsement vs. inter-State reciprocity in, 1219
Life insurance and vaccination, 234
insurance examiner, the pulse as a guide to the, 774
insurance, some interesting observations on, 135
the prolongation of, 263
Ligament, the appendiculo-ovarian, 1149
Ligature, McGraw's elastic, 718
McGraw, demonstration of the, 405
McGraw, experimenting with the, 958
Light cure in London, the, 368
Lilienthal, Howard, a brief report of four years of genito-urinary work in the second surgical division of Mount Sinai Hospital, 1161, 1202
Lily-of-the-valley, properties of, 504
Linseed poisoning, 170
Lipemia, origin of fat in, 762
Lip, lower, the utilization of the, in rhinoplasty, 439
Lipoma, small, of the cord, 519
Lipomata, multiple, 1048
Liquors, Canadian, no adulteration in, 711
Litholapaxy, perineal, 1031
Live burial, proposed safeguard against, 465
Liver, acute yellow atrophy of the, with pregnancy, 451
amebic abscess of the, 474
dulness, diminution of, 1082
Liver, excision of tuberculous mass from, 404
experimental pathology of the, 456
hepatectomy for tuberculoma of the, 727
infections, 1000
investigations on the, 892
malignant adenoma of the, 1000, 1001
necrosis, experimental production of, by hemagglutinins, 765
pulsating, 533
tardy abscess of the, 1082
zonal necrosis of the, 1000
Livingston, Alfred T., ergot in alcoholism, morphinism, and the general class of drug habit cases, 445
Lloyd, James Hendrie, two cases of paralysis of the ulnar nerve; one following a severe attack of typhoid fever; the other caused by pressure during occupation, 1156
Lobar and bronchopneumonia in infants and children, the pathology of, 820
Localization of hemichorea, 215
Loco disease, 431
Locomotor ataxia, alcohol as a cause of, 1129
ataxia, arthropathies of, 572
ataxia, a salt solution in, 894
London letter, 80, 140, 178, 230, 275, 321, 368, 417, 465, 513, 567, 614, 665, 713, 903
medical school endowed, 613
school of medicine for women, 465
London's war on rats, 38
Long Island, climate of, 280
Loomis Sanatorium, addition to, 993
Lorenz, report on two cases operated on by, 604
to receive degree from Jefferson, 566
Loving cup to Dr. Quine, 415
Lues, cerebrospinal, 811
Lumbar Pott's disease, 573
puncture, 1137
puncture in uremia, 750
puncture, the uses of, 453
puncture, treatment by, 954
Lunacy in Great Britain, 512
report, New York State, 563
Lung, asthmatic, 1207
carcinoma of the, 379
Lungs of New York, the, 559
Lymphocytes, eosinophilous transformation of, 810
Lymphocytosis of the cerebrospinal fluid, 333
Lysol poisoning, 1176
solution, intraspinal injection of, in the treatment of cerebrospinal meningitis, 913
Lytic serum, influence of salts on, 762

Macrophagocytic reactions of the human spleen, 988
Macroscopic test for leucocytosis, a, 937
Macy, Dr., to be transferred, 77
Malaria, epidemiology and treatment, 264
in Istria, 135
Stanley's observations on, 948
Mallein reactions, notes on a number of, 372
Malignant growths, starvation for, 1144
Management of fever in childhood, 1153
Manges, Morris, intraspinal injection of lysol solution in the treatment of cerebrospinal meningitis, with a report of three cases, 913
Manhattan Dermatological Society, 227, 413, 610, 809, 1037
Eye and Ear Hospital, gift for, 1036
Mania and melancholia, motor symptoms of, 893
Maragliano, Dr., ill, 611
Prof. Edoardo, specific therapy of tuberculosis and vaccination against the disease, 625
Maragliano's vaccination, 659
Marine Hospital improvement, 417
Marmorek's tuberculosis serum in Montreal, experiments with, 272
Marshall, David T., a simple and inexpensive rheostat to use with the electric light current, 440
Maryland Tuberculosis Congress, the, 274
Massage, direct heart, 655
of the heart as an aid to resuscitation, 709
therapeutic value of, in acute diseases, 1200
Massachusetts Medical Society, 664
Mastoid bone, when and when not to operate on the, 757
operation, radical, 663
operation, radical, for chronic purulent otorrhea, 995
Mastoiditis, 105
Masturbation and enuresis, 235
Matas' operation for popliteal aneurism, 1145
Maurice Porter Hospital, donation of $75,000 to the, 994
Maxilla, inferior, splint for treatment of fracture of the, 396
Mayer, Julius M., criminal procedure against the unlawful practice of medicine, 193
May moving, dangers of, 756
Mayo, William J., the association of surgical lesions in the upper abdomen, 1111
ulcer and cancer of the stomach from a surgical standpoint, 721
McCaskey, G. W., a remarkable case of gastric cancer: separate involvement of cardia and pylorus: gain of 35 pounds in weight within three months of death, 1021
McGraw's elastic ligature, 718
ligature, demonstration of the, 405
McGill Medical Society celebrates anniversary, 319
new appointments in the faculty of medicine at, 1091
University, 1039
University, convocation at, 1182
University, dental course to be established at, 135
University, the donations to, 711
McLeod, Dr., able to walk, 710
Measles, 909
bacteriology of conjunctivitis of, 659
epidemic of, 611
occurrence of Koplik spots in, 450
prevalent, 898
pulmonary complication of, 456
return, 563
Meat dealer fined, 1217
inspection, to regulate, 415
raw, treatment of pulmonary tuberculosis with, 68
Mechanism of posterior occipital positions, the, 168
Meckel's diverticulum, strangulated, 163
Median perineal prostatectomy, 421
Medical and Chirurgical Faculty of Maryland, 527
and Chirurgical Faculty of Maryland—section on clinical medicine, 183, 474, 671, 815, 911
and dental professions unite on questions of legislation, 662
Association of the Greater City of New York, the, 183, 423, 475, 507, 955, 1052
bigotry, 617
branch of the Canadian militia, the, 711
class organizes, 1090
clerk, 177
colleges barred, 177
corps, increase of, 417
education, some aspects of, 1105
examination in Squadron A, 36
examination, result of, 78
examinations of the University of Oxford, the, 465
Examiners of New Jersey, State board of, 902
inspection of schools instituted, 709
inspectors appointed, 365
interne, 1091
Jurisprudence Society, 176, 228
laboratories of the University of Pennsylvania, 565
legislation in New York, 807
Library and Historical Journal, 663
magazine, new, 415
man at the head of the health department, a, 475
officers, examination of, held, 946
Premier for Cape Colony, a, 513
profession, the, 759
science, the economic value of, 385
service of the Japanese army, the, 469
Society of the County of New York, the, 413
Society of the State of New York, 234, 278
treatment of neuralgia, the, 558
Medicine and pharmacy, 562
fifth year in, in Ontario, 1183
London school of, for women, 465
preventive, 1120
prophylactic, and the Panama Commission, 458
tropical, 134
unlawful practice of, 193
woman's place in, 175
Medico-chirurgical commencement, 1090
Hospital opened, 365
Medicolegal, new, college, 1180

Mediterranean fever, a possible new form of, 795
Melanin and glycogen in melanotic tumors, 165
Membership, increase of, 949
Membranous stomatitis, recurring, 284
Mendel's law, 1103
Meningitis at League Island, 900
basilar, 755
basilar, new sign of, 1129
cerebrospinal, epidemic in children, 954
cerebrospinal, epidemic of, 1063
cerebrospinal, lysol solution in the treatment of, 913
cerebrospinal, the clinical features of, 1065
epidemic, 1180
in Malone, 613
specific, 518
Meningoencephalitis, hemorrhagic, 1044
Mental disorder, a few considerations concerning the mechanism of developing, 926
symptoms connected with distinct visceral changes, 384
Mercury in therapeutics, the unique position and value of, 574
and iodine to combat local infections, 1201
Merging of two medical journals, the, 316
Merrins, Edward M., the pathology and treatment of osteoarthritis, 152
Mesentery, bacteria in the, of normal animals, 765
Metacarpal bones, extirpation of, 662
Method, new, of identifying human blood, 619
of determining albumin, a new, 455
of imbedding and hardening, a rapid, 166
Methods, confusing, of treatment, 669
Methodist Hospital, additions for, 415, 993
hospital for Toronto, a, 902
Metrophlebitis, puerperal, 452
Metrorrhagia at fourteen, 983
Mexico, yellow fever in, 1124
Micrococcus flagellatus, 807
Micropsia and macropsia, 653
Milk, fight for pure, 804
how to produce the best, 1197
in gastro-enteritis, acid creamless, 214
low temperature of, required, 945
supply in Philadelphia, 228
supply, to control the, 228
tubercle bacilli in, 919
Miller, Charles C., excision of the frenum preputii following laceration during a suspicious intercourse, 19
James Alexander, a study of the tuberculosis problem in New York City, 1014
Millions for improvement of hospitals, 709
Mineral waters and radium, 281
Miners' anemia and hookworm disease, 785
Minister of Health, a, 665
Mitchell, Dr., dinner in honor of, 133
Mitral obstruction and insufficiency, 533
Moles and warts, danger in, 1143
Money, clean, 268
where it will do the most good, 948
Montreal General Hospital, annual meeting of the, 417
Western Hospital, 902
Moore, John T., the occurrence of *Tænia nana* in Texas (the first, or at least, the second, reported case in North America), 251
Moral deficients among children, 38
Morgan, A. C., the importance of dropsy as a symptom, 649
Morphine derivatives, some, 122
habit, some subjective hints of the, 113
on animal heat mechanism, action of, 213
poisoning, permanganate of potassium in, 312
with digitalis, 1186
Morphinism, ergot in, 445
Morphology and chemistry of fatty degeneration, 216
comparative, of vaccine bodies, 809, 907
Morrow, Prince A., a plea for the organization of a "Society of Sanitary and Moral Prophylaxis," 1073
Mortality and adenoid operations, 518
for 1903, 134
foundlings, decrease of, 607
influence of weather conditions on, 37
in war, causes of, 1134
of diphtheria, 415
Mosquito extermination conference, the, 77
year, a, 1089
Mosquitoes, extermination of, 513
in South America, war on, 663
Moths, the nature and basis of sexual selection in, 571
Mt. Sinai Hospital, 564
attending physicians, 563
hospital appointments, 208, 707
Hospital, opening of the new, 413
Hospital's year, 226
Mouth-breathing, 517
Movable kidney, 651
kidney, influence of trauma in, 498
spleens, 999
Mucous membrane, gastric, in the esophagus, 455
Müller's operation for uterine prolapse, 167
Multiple fat necrosis, 449
zona, 31
Municipal Hospital, 803
Munyon, Prof., must pay $20,000, 1038
Murdoch, Frank H., the clinical significance of pain in the epigastrium, 538
Murmur, diastolic, the, in diagnosis, 873
Murphy button, disadvantages of the, 1145
button, modified, 718
Murray, Eugene W., management of fever in childhood, 1153
Muscle, unstriated, the physiology of, 501
Muscles, intercostal, in pneumonia and pleurisy, changes in the, 365
Muscular exercise, changes in the blood after, 987
Musical equivalent of epilepsy, 452
Music for the insane, 994
Musser, John H., some aspects of medical education, 1105
Myasthenia gravis pseudoparalytica, 1003
Myelitis, hemorrhagic, 1044
streptococcic, 953
tuberculous, 673
unusual forms of acute, 953
Myelogenous leucemia, 431
Myocarditis, chronic, clinical aspect of, 880
Myomectomy in its relation to pregnancy, 815
Myositis, tuberculous, 282
Myxedema and diabetes mellitus, 1231
Myxolipoma, retroperitoneal, 1147

Narcosis, improvements in, 30
Nasal septa, etiology of distorted, 486
Nasopharynx, tumors of the, operative treatment of, 499
Nathan, P. William, etiology of rachitis, 391
National Antituberculous Association, another, 611
Association on Tuberculosis, constitution and by-laws of the, 1135
Nature of fatty degeneration, 126
Nausea, postanesthetic, 1223
Navy doctors wanted, 945
Necrology, medical, 988
Necrosis, two cases of severe X-ray, 351
Negro as a distinct ethnic factor, the, 905
infectious diseases among, 69
Neonatorum, acute contagious pemphigus, 451
Neoplasms, 41
Nephrectomy, case of, 85
for primary tuberculosis of the kidney, 1099
Nephritis, 202
and arteriosclerosis, 1142
beginning of, 951
causes of chronic, 285
chronic interstitial in the young, 475
chronic, renal decapsulation in, 520
in infancy, observations on the occurrence of, 142
medical treatment of, 286
operations for, 362
proteids in the urine of, 701
surgical treatment of, 285, 382
symposium on, 285
Nephropexy, 522
Nerve deafness, tobacco, 218
hygiene of school children, the, 947
regeneration, Prof. Halliburton's lectures and, 174
root, posterior, relation of, to spinal ganglion, 707
surgery for the relief of palsies, 849
trifacial, and its ganglia, 1190
Nerves, post-mortem irritability in, 538
Nervous diseases, mortality from, 804
diseases, are they increasing?, 1213
impulse, the rapidity of the, in tall and short individuals, 407
Nervousness, talks on, 611
Neuralgia, intracranial neurectomy for trigeminal, 1190
the medical treatment of, 558
trigeminal, treatment of, 318
Neurasthenia, 159
the treatment of, 637
Neuritis, multiple, 1003
infectious, and myelitis, 953
multiple, an unusual case of, 373
Neuroglia, myoglia and fibroglia fibrils, 717
Neurological Society, 176
Society, Philadelphia, 420
Neuroma, acoustic, 812
Neuroses, syphilis as a cause of the, 805
Neutrophile leucocytes in infectious diseases, 605
New Bellevue, the, 895
Brunswick Provincial Hospital for cure of nervous diseases, 711
Fordham Hospital, 898
medical journal, 134
Seaside Hospital, 900
Newcomet, William S., pathological changes in tissue under the influences of the X-ray, 685
Newman, Dr., illness of, 1090
Newton, Richard C., hysteria and organic disease, 739
New York Academy of Medicine, 507
Academy of Medicine, the—section on diseases of children, 376
Academy of Medicine—section on genito-urinary surgery, 84, 186, 519, 620
Academy of Medicine—section on medicine, 754
Academy of Medicine—section on orthopedic surgery, 327, 428, 766
Academy of Medicine—section on pediatries, 523, 660
certificates to be credited, 994
Neurological Society, 92, 331, 810, 1002
Pathological Society, 325, 372, 907, 1044
Psychopathic Hospital, 1036
Reception Insane Hospital, Odell approves bill for, 1036
School of Clinical Medicine, 898
University building decision, 708
University, new laboratory building for, 1179
New York's insane, 799
Nicoll, Matthias, Jr., the symptomatology, differential diagnosis and course of bronchopneumonia in children, 817
Nicotine, the action of, 1021
Nitriles and their antidotes, 1101
Nitrites, poisoning with, 220
Nitrogen in urine, distribution of, 988
Nitroglycerin and digitalis, 378
Nitrous oxide-ether anesthesia, 1159
North Branch Philadelphia County Medical Society, 473, 574, 860, 1006
Northrup, Dr., address of, 415
W. P., treatment of bronchopneumonia in children, 823
Northwest Medical Society of Philadelphia, 142, 330
Notes on blood coagulation, 652
Noyes, William B., hysteria and organic disease, 739
Nuisances, insanitary, 127
Nurse added to staff of normal school, 946
Nurses for sick dogs, 368
given diplomas, 1030
local, go to Japan, 462
must go visiting, 176
new training school for, 134
receive diplomas, 900
the State registration of, 513
trained, in convention, 946
Nursing in tuberculosis, value of district, 175
Nutrient enema, new, 220

Obituary—
Adler, Dr. John Mercer, 367
Alexander, Dr. W. O., 1040
Andrews, Dr. Edmund, 230
Arnold, Dr. A. B., 665, 713
Baker, Dr. Frank E., 513
Baker, Dr. Washington H., 713
Bennet, Dr. George H. R., 275
Billington, Dr. Cornelius E., 136
Bissell, Dr. Philip, 750
Blair, Dr. Frank P., 1040
Bok, Dr. Frank S., 368
Boocock, Dr. Robert, 30
Brooks, Dr. George Washington, 1136
Butler, Dr. George H., 665
Campbell, Dr. Rollo, 1184
Chew, Dr. Thomas John, 903
Chors, Dr. Henry A., 136
Clarke, Dr. Stanley G., 567
Cushing, Dr. Clinton, 948, 996
Damon, Dr. Silas J., 80
Dana, Dr. Edward B., Jr., 230

Obituary (Continued)—
Davis, Dr. Nathan Smith, Jr., 1220
Davis, Dr. W. E. B., 43
De Schweinitz, Dr. Emil Alexander, 368
Drysdale, Dr. Thomas Murray, 1092
Dunn, Dr. James H., 1220
Duperier, Dr. Alfred, 665
Eidenbenz, Dr. Anton, 80
Everitt, Dr. Edward A., 136
Ferguson, Dr. James, 136
Fitzmaurice, Dr. Thomas J., 1040
Fridenberg, Dr. Edward, 316
Fritts, Dr. Crawford K., 759
Frowert, Dr. Charles G., 136
Garrison, Dr. C. M., 665
Gould, Dr. Orissa W., 948
Hackenburg, Dr. George H., 136
Hanna, Dr. Edmund S., 177
Hammond, Dr. George H., 713
Hinkson, Dr. John R., 320
Holcombe, Dr. William Frederick, 614
Hopkins, Dr. William Barton, 946
Ireland, Dr. William H., 136
Irving, Dr. Frank K., 614
Isham, Dr. Ralph N., 1092
Jackson, Dr. D. P., 1040
Kinne, Dr. Theodore Y., 513
Kissam, Dr. Daniel Embury, 39
Knight, Dr. Moses D., 513
Kohnstamm, Dr. Lorenzo J., 853
Krehbiel, Dr. August, 368
Lee, Dr. Edward Henry, 854
Leepere, Dr. Matthew, 1136
Ludlow, Dr. Ogden Curtis, 465, 513
Marcy, Dr. Virgil M. D., 230
Mason, Dr. Edwin Gaillard, 1040
McDermott, Dr. William J., 567
McGee, Dr. William H., 948, 996
McInnes, Dr. Thomas, 614
McKay, Dr. David, 665
Moore, Dr. V. H., 1184
Morris, Dr. Moreau, 614
Morse, Dr. Verranus, 567
Neville, Dr. George W., 513
Newman, Dr. William, 39
Nutten, Dr. Wilbur F., 807
Park, Dr. Anna E., 1136
Pearce, Dr. F. Savary, 1093
Polk, Dr. John Metcalfe, 665, 755
Potter, Dr. Emory, 465
Rafael, Dr. Max G., 368
Rankin, Dr. William, Jr., 513
Reed, Dr. Stuart H., 136
Rooney, Dr. Joseph G., 320
Ruggles, Dr. Augustus D., 39, 316
Rundlett, Dr. Henry A., 513
Russell, Dr. Howard C., 478
Sanford, Dr. James Brownlee, 614
Schaefer, Dr. Frederick C., 1136
Shaw, Dr. Frank, 176
Simpson, Dr. James, 1220
Thompson, Dr. George, 275
Thompson, Sir Henry, Bart., 807
Toal, Dr. David D., 465
Treacy, Dr. D. J., 1220
Truax, Dr. Stephen P., 713
Trudeau, Dr. Edward Livingston, Jr., 903
Wait, Dr. Phoebe Jane Babcock, 275
Wallace, Dr. David L., 513
Wallis, Dr. Hugh M., 39
Waterworth, Dr. William, 996
Watkins, Dr. Thomas W., 614
West, Dr. Hamilton A., 79
Whybrew, Dr. Charles T., 567
Wilding, Dr. R. J., 465
Woodcock, Dr. Samuel, 39
Woodward, Dr. Alvin M., 1040
Young, Dr. William H. A., 39

Observations on human bile, 652
Obstetrical practice in China, native, 169
Society of Philadelphia, the, 88
Obstetrics at Dartmouth, 1217
Obstruction, intestinal, 47
of the large gut, 406
Occipital positions, posterior, mechanism of, 168
Occipitoposterior positions of the vertex, management of, 1077
Ocular complications of scurvy, 219
signs of syphilis, the, 493
Odell approves bill for New York reception insane hospital, 1036
Olecranon process, gunshot wound of the, 1048
Olive oil in diseases of the stomach, 1032
oil in the treatment of chronic dysentery, 651
Oliver, Dr., a guest of the British Medical Association, 1038
Omentum, greater, the protective function of the, 938
inflammation of the, 990
Omentum, suture of the, to the parietal peritoneum for ascites, 448
Ontario Board of Health, a new secretary for the, 270
doctors may be prosecuted for failure to make returns, 711
Medical Association, 272, 1218
Oophorectomy for mammary carcinoma, results of, 501
Opening of medical club rooms, 460
of the new Mount Sinai Hospital, 413
Operation by Dr. Ridlon, 509
Operations for nephritis, 362
surgical, the individual equation of the patient in, 529
Ophthalmia, gonorrheal, prophylaxis of, 1032
Ophthalmology and otology and dentistry, relationship existing between, 730
tenth international congress of, 464
Opie, Eugene L., lesions peculiar to the pancreas and their clinical aspect, 961
Opitz, Dr., appointment of, 1089
Opium in infancy, the danger of the use of, 1173
use of, increasing, 803
Opotherapy in kidney disease, 456
Optimism, 618
Optometry bill, 284
Orange hospital, bacteriologist to the, 36
Orchitis, chronic, 86
fibrous, etiology of, 846
Order of St. Joseph to erect hospital, 612
Organic disease, hysteria and, 739
Organisms that passed filters, 1000
Organotherapy in diseases of the pancreas, 1176
Osmic acid injections, 1190
acid, treatment of trigeminal neuralgia by injections of, 318
Osteitis of the left hip and of left fourth metacarpal bone, 428
Osteoarthritis, the pathology and treatment of, 152
Osteoma, frontal sinus, diagnosis of, by the X-rays, 1084
Osteomalacia, 851
Osteomyelitis, acute, 1034
of the spine, acute infectious, 573
Osteopathy in New York, 714
Ostitis, tuberculous, of the knee, 45
Otitis media in croupous pneumonia, 726
media, suppurative, 278
Otorrhea, chronic purulent, radical mastoid operation for, 995
Outlook in therapeutics, a new, 897
Ovarian grafting, 311
implantation on menstruation in women, the influence of, 1195
pregnancy, 1099
Ovary, hemorrhages from the, 985
Oxygen gas for cystoscopy, 747
Oxalic acid in diabetes, 701
acid, ruling in favor of, 995
Oxford Medical School, the, 178
Oysters, New York's, and typhoid fever, 1178
typhoid bacillus infection of, 325

Pachymeningitis, tuberculous, 673
Pain, abdominal, and polyuria, 950
abdominal, of intestinal origin, 289
in general, abdominal, 282, 283
intestinal, 283
in the epigastrium, the clinical significance of, 538
the pathognomonic symptom, 1139
Pains, transferred, 283
Palsies, nerve surgery for the relief of, 849
Panacea, fresh air a, 526
Panama Commission and prophylactic medicine, the, 458
Pan-American, fourth, Medical Congress, 1183
Pancreas, advances in the physiology of the, 476
cancer of the, 236
classification, symptomatology and pathology of, 477
cysts of the, 20
diagnosis of the diseases of, 476
lesions peculiar to the, 961
organotherapy in diseases of the, 1176
pathology and surgery of the, 704, 1031
secretion and blood-flow of, 892
surgery of the, 331
the classification and symptomatology of diseases of the, 968
the prophylaxis and medical treatment of diseases of the, 968
the rôle of the, 129
Pancreatic cyst, 379
cysts and stone, 794
digestion, the influence of various salts on, 892
diseases, discussion on, 475
juice, researches in the, 892
Pancreatitis, acute and chronic, 330, 331
surgical treatment of, 478
Paraffin, injection, use of, 1144
Paralyses, central, of pregnancy, 985
Paralysis, cardiac, in toxemia, 894
facial, 718
facial, recurrent peripheral, 1004
hysterical, in men, 671
Landry's, 1229
left-sided, 527
of abdominal sympathetic following labor, 311
of the abdominal sympathetic, 90
of the bowel, 46
of the ulnar nerve, 1156
pseudobulbar, 527
relief of, 858
vocal cords in double recurrent, 359
Parasitic hemoptysis, 763
Parathyroid gland, pathology of the, 215
Paratyphoid infection, 375
Paresis, general, the early diagnosis of, 679
Parsons, Frank, the story of New Zealand, 432
Pasteur institute desired, 993
institute needed, 756
institute, work of the Chicago, 366
treatment at home, 900
Pasteurized milk society, 859
Patella, operative treatment of habitual subluxation of the, 748
pathology and treatment of simple fracture of the, 1124
recent fractures of the, 404
Patent medicine curse, the, 1086
medicines and Postal Department, 1135
Pathogenesis of blood diseases, 126
Pathology and surgery of the pancreas, 704
and treatment of recent fractures of the patella, 404
experimental, of the liver, 456
of renal decapsulation, 285
of scars, 797
of the parathyroid gland, 215
Pathological exhibit at Baltimore, 277
laboratories, Bellevue Hospital, director of, 992
society, 37, 850
society of Philadelphia, 78
Paul, Georgie P., pericarditis; with the report of cases, 594
Peace in Leipzig, 1040
Pearson, Dr., reappointed, 62
Pedersen, Victor C., two advantageous procedures in anesthesia work; report of cases, 255
Pelvic floor lacerations, repair of, 1150
Pemphigus neonatorum, acute contagious, 451
Penal hypospadia, 662
Penis, complete removal of the, 857
Pennsylvania Hospital, 134
Society for the Prevention of Tuberculosis, 946
Pepper, Dr. William, biography of, 509
Pepsin, quantitative determination of, 220
Peptones and albumoses, 173
Percussion, auscultatory, 161
Perforation, symptoms of, 1139
typhoid, surgical intervention in, 267
Perforations, posterior, of the fixed portions of the duodenum, the treatment of, 423
Pericarditis, 202, 594
prolonged delirium in, 1185
with effusion, 182
Perigastric adhesions, surgical treatment of, 845
Perimeningitis, acute suppurative, 573
Perineal drainage, 668
lacerations, treatment of, 168
zoster, 181
Perinephritis in children, 1229
Perineum, foreign bodies in, 621
Peritonitis after appendicitis, difficulties of early diagnosis of, 163
chronic adhesive sclerosing, 421
diffuse septic, 1011
grave septic, 1150
the relation of the anotomy and physiology to the treatment of, 422
treatment of diffuse septic, 279
Perkins, J., varieties of pulmonary tuberculosis, 744
Permanganate of potassium in morphine poisoning, 312
Pershing, Howell T., the treatment of neurasthenia, 637
Persodine in phenol poisoning, 503

Perspiration, human, original research regarding, 462
Pertussis, pathology of, 216
Pessaries, stem, diseases cured by, 169
Pessary, stem, use of the, 1196
Pest hole, canal site a, 613
Peter, Luther C., diagnosis and treatment of syphilis of the central nervous system, 494
Peterson, Dr., and the hospital movement, 802
Dr., resigns, 460
Phalanges, enlargement of the, in rickets, 297
Pharmacist examinations, 565
Pharmacists, new test for, 37
Pharmacologist, 274
Pharmacy and medicine, 562
Pharyngeal lesions of syphilis, 496
Phenomena, agglutination, of the staphylococci, 652
proof not degeneration, 954
Phi Chi fraternity, 1092
Philadelphia Hospital, 992
Hospitals' Association, 1038
Hospital examination, 661, 994, 1011
Hospital residents, 611
Medical Club, 176
Neurological Society, the twentieth anniversary of the foundation of the, 420
Philippine anemia, 909
Philippines, study of infectious diseases in the, 274
the typhoid cost of the, 35
Phipps Institute, 710, 803, 90
Institute anniversary dinner, 661
Institute lecture, 317
Institute, the Henry, 566
Phonendoscope, the value of the, 1083
Phototherapy, new methods of, 1214
Phthisis, antitreptococcus serum in, 122
Physical deterioration of the British people, 368
director for university, 1180
economics, the scope of, 838
tests for teachers, 1217
training and heredity, 995
Physician in the Apocrypha, the, 179
Physicians and Surgeons announcement, 660
as heads of municipal departments, 73
Association, East Side, 175
careless, to be punished, 317
Club of Chicago, 416
dentists and, 224
in demand, 613
pilgrimage to Rome, 417
recent statistics of, 273
relations, 473
Physiological action and solution tension, 501
albuminuria, 499
Physiologic chemistry of diabetes, 236
Physiologist, retirement of a famous, 178
Physiology of the lymphatic system, the surgical, 40
of unstriated muscle, the, 501
to medicine, the relation of, 1180
Piezometer, 815
Pigmentation, animal, some phenomena of, 987
Pilgrimage to Rome, physicians', 417
Pityriasis versicolor, 593
Placenta, human, the fat-assimilating function of the, 407
previa, 280
previa, Cæsarean section in, 1149
prolapse of the, 503
separation of a normally-situated, 310
Plague death, another laboratory, 202
in India, 515
in Pretoria, the, 614
Plasma cells, origin of, 796
Platinum black, the hydrolysis and synthesis of fats by, 212
Plexus, periureteral arterial, 384
Pneumonia, 79, 228, 815
and appendicitis, 284
and consumption, 612
and pleurisy, changes in the intercostal muscles in, 365
and pneumococcus infection, studies in, 939
and tuberculosis in Chicago and New York, 1089
and typhoid, increase of, 415
as an infectious disease, 570
bacteriological knowledge concerning, 816
calomel in, 210
carbonate of creosote in, 170
cases, series of, 1141
croupous, otitis media in, 726
diagnosis of, 377
epidemic in New York, 36
Pneumonia, factors that influence, 318
heart failure in, 1200
hypodermoclysis in, 1082
increase of, 1140
in diabetes, 431
insidiousness of, 378
internal medication and external application in, 1200
lobar, iodide of potassium in, 982
mortality of, 1141
patient, how to kill a, 525
pneumobacillus, pathology of, 1130
serum treatment of, 1200
shock of, 1141
the blood in, 700
therapeutic side of, 816
treatment of, 300, 377, 525
treatment of, in children, 612
venesection in, 1141
Podophyllin in anchylostomiasis, 606
Poisoning, arsenical, in England, 38
by egg, 996
by the white of an egg, 746
chronic brass, 1176
lysol, 1176
morphine, 312
with nitrites, 220
Poisons, a study of the antagonistic action of, 654
protoplasmic, on tryptic digestion, the effect of, 401
Police department, transferred to the, 1133
Policemen, tuberculous, suspension of, 77
Polyclinic Hospital, 133
Polycythemia, chronic cyanotic, 317
chronic cyanotic, with enlarged spleen, 499
Polomyositis, acute, 449
Polyuria and abdominal pain, 950
in typhoid fever, 949
Pond, A. M., normal labor considered from a surgical standpoint, 693
Pontomedullocerebellar space, tumor of the, 812
Pooley, Thomas R., case of mastoiditis, sinus thrombosis, pyemia; two operations; recovery, 105
Poor, antitoxin for the, 567
Porro's operation, modification of, 605
Possibilities of gastric surgery, the, 221
Postal department and patent medicines, 1135
Posterior occiput positions, Tarnier's principle of forceps rotation in, 982
Post-Graduate Hospital, gift to, 898
Hospital, report of, 132
Postpartum tubo-ovarian abscess causing hydronephrosis, 1023
Postural albuminuria, 358
Potassium iodide, 952
Potter, Palmer A., the relation of proteids to edema in marantic children, with urinalyses in infantile diarrhea, 56
Pott's disease, 430
disease, cervicodorsal, with the application of a gas-pipe frame, 430
disease, lumbar, 573
Powers, Charles A., interscapulothoracic amputation for sarcoma, 145
Practical applications, 949
Practitioner, 1094
Practitioners, illegal, 946
Precipitins, 375
produced by tubercle bacilli, differences in, 765
Pregnancy, acute yellow atrophy of the liver with, 451
and tuberculosis, 310
central paralyses of, 985
diabetes as complication of, 167
early signs of, 604
ectopic, doubtful specimens of, 1194
extrauterine, 47, 450
extrauterine (ovarian), 167
ovarian, 1099
volvulus in, 168
Preliminary fever, 950
Presbyterian Hospital, addition to, 366
Hospital, new superintendent for, 176
Presidential address, 949
Pressure, osmotic, of the blood, 161
Prevention of iodism, 218
of tuberculosis, a royal commission for the, 417
rather than treatment, 185
Preventive inoculations, 1137
medicine: its achievements, scope, and possibilities, 1120
Prices, drug trust to raise, 37
Prioleau, W. H., the value of climate in genito-urinary tuberculosis, 65
Prison systems, faulty, 511
Prize essays, X-ray, 268
Problem of glycolysis, the, 701
Professorship, new, of pediatrics in Columbia, 809
Professors, twentieth century, 75
Prognosis, its theory and practice, 1116
Progressive Health Club, work of, 177
medicine, 1104
Poolapsed kidney, 162
Prolapse of the placenta, 503
operations, permanent results from, 452
uterine and vaginal, treatment of complete, 1150
Prolongation of life, the, 263
Prophet of Self-help, the, 903
Prophylaxis, 1140
and medical treatment of diseases of the pancreas, 478
and treatment, 235
Prosecution of Hanish, 1134
Prostatectomy, complications and sequelæ of, 421
median perineal, 421
perineal, 1192
Prostate gland, hypertrophy of the, 789
hypertrophied, choice of operation for, 31
removal of the, 405
study of the, 39
surgery of the, 846
Prostatic douche tube, 519
hypertrophy, reflections on the surgery of, 791
obstruction, 1192
Proteid chemistry, results of recent investigations in, 239
Proteids, chemistry of, 988
in diabetes, behavior of, 209
in the urine of nephritis, 701
Protoplasmic activity of the renal epithelium, 123
Protozoa and disease, 1093
attenuated, 1000
of scarlet fever, 954
Provident hospital, children's department for, 37
Pseudo-appendicitis, 283
Pseudobulbar paralysis, 527
Pseudohermaphrodite, 311
Psychopathic branch of New York Hospital, 1179
Psychoses, special reference to the treatment of, 599
Ptosis relieved by operation, 331
Puberty, albuminuria of, 161
Puerpera, the, her care and comfort during convalescence, 184, 185, 186
Puerperal fever, treatment of, 312
metrophlebitis, 452
sepsis, 605
Puerperium, gonorrhea in the, 986
Pulmonary abscess, surgical treatment of, 422
and cardiac disturbances accompanying diseases of the biliary passages, 29
complication of measles, 456
insufficiency, diagnosis of, 843
tuberculosis as an infectious disease, 682
tuberculosis, varieties of, 744
Pulsating exophthalmos, 798
Pulse as a guide to the life insurance examiner, the, 774
Pure food, national legislation for, 272
science to medicine, the adaptation of, 1137
Purgatin—new laxative, 1032
Purinemia, 322
Purins, the, 323
Purpura due to gastro-intestinal disturbances, 619
hemorrhagica, 376
Pus and blood in the urine, the significance of, 541
collections in the pelvis, 44
Pusey, Wm. A., and Eugene W. Caldwell, the practical application of the Roentgen rays in therapeutics and diagnosis, 144
Pyelitis complicating pregnancy, 1101
in infants, 215
Pyeloparanephric cyst, traumatic, 441
Pyemia, 105
Pyloric stenosis, treatment of, with thiosinamine, 65
Pylorus, insufficiency of the, 236
palpation of the, 68

QUANTITATIVE determination of pepsin, 220
Quarantine for consumptives in Australia, 101
Queen's, Kingston, Ont., news from, 1091
University alumni dinner, 1039
University, Kingston, laboratory for, 135

Quimby, Chas. E., a factor in the etiology of distorted nasal septa, 486
Quine, Dr., degree conferred upon, 1218
presentation of loving cup to, 415
Quinine derivatives, toxicity of certain, 1102

Rabid brain substance, disintegration of, 32
Rachitis, etiology of, 391
Radii, double congenital dislocation of the heads of, 1048
Radioactivity, 281
Radium and mineral waters, 281
bromide, pure, 241
exhibit at St. Louis exposition, 320
in ocular therapentics, 312
properties of, 122
rays, the action of, 654
salts, some of the physical properties and medical uses of, 241
Railroad hospital cars, 462
Railway accidents during 1902, 37
Surgeon, American Academy of, 1134
Surgeons, International Association of, 1134
Ransohoff, Joseph, hepatectomy for tuberculoma of the liver, 727
Rapidity of the nervous impulse in tall and short individuals, the, 407
Ratification of unfication plans, 460
Rats, London's war on, 38
Rattlesnake bites, serum for, 952
poison, immunity to, 942
Ravenel, Mazyck P., the influence of bovine tuberculosis on human health, 876
Rays, Roentgen, the diagnostic value of, 62
Reagent for acids, new, 165
Reber, Wendell, the ocular signs of syphilis, 493
Reception hospital at Saranac Lake, 1035
Receptors. Susceptibility to toxins. Relation to metabolism, 761
Reciprocity convention, 1091
Record esophageal dilatation, 954
Rectum, injury to the, in gynecological examinations, 1196
Red Bank Sanitarium, 1133
light treatment for smallpox, 1180
Reed Memorial Committee, 949
memorial, Dr. Walter, 1136
(Walter) Memorial Association, 1092
Reflexes and tendon phenomena, diagnostic significance of certain, 453
subcortical expressive, and their spinal pathways, 572
Regeneration of cartilage, 445
Regulate meat inspection, to, 415
Relations between physiological action and chemical constitution, 408
Relationship existing between ophthalmology and otology and dentistry, 730
Relief of various forms of hernia, 500
Removal of the prostate, 405
Renal decapsulation for unilateral hematuria, 749
decapsulation from the pathologist's point of view, 970
decortication versus section, 847
diagnosis, functional, 30
diagnosis, functional, without ureteral catheterization, 122
tension, 286
tuberculosis, some features of, 783
Rennet and anti-rennine, experiments with, 124
Requests of Health Commissioner Reynolds denied, 462
Researches, experimental, 476
Research, original, regarding human perspiration, 462
Resection of arteries and end to end union, 422
Resident medical director, 134
Resistance, lack of vital, 999
Rest treatment, development of the, 268
Retention of urine, vesical, 1166
of water in fevers, 950
Retrodisplacements, the correction of, of the uterus, 382
Retroversion in the gravid uterus as a cause of acute cystitis, 169
Reunion and dinner, annual, 413
Reviews—
Abrams, Albert, the blues, 479
Allchin, W. H., a manual of medicine, 863
Annual report of the health of the Imperial Navy (Japan) for the year 1901, 480
Archinard, P. E., the Medical Epitome series, microscopy and bacteriology, 575
Reviews—
Ashby, Thomas A., a text-book of the diseases of women, 96
Bickham, Warren Stone, a text-book of operative surgery, 95
Bocciardo, A. D., medical electricity, 1056
Buck, Albert H., a reference handbook of the medical sciences, 864
Cabot, Richard C., physical diagnosis of diseases of the chest, 192
Caird, Francis M., and Charles W. Cathcart, a surgical handbook for the use of students, practitioners, house surgeons and dressers, 101
Carr, Walter Lester, transactions of the American Pediatric Society, 1902, 191
Cone, John A., the man who pleases and the woman who charms, 720
Conn, H. W., bacteria, yeasts and molds in the home, 576
Cooke, Joseph Brown, a nurse's handbook of obstetrics for use in training-schools, 192
Crile, George W., blood pressure in surgery, 719
Cross, M. J., and Martin J. Cole, modern microscopy, 816
Da Costa, John Chalmers, modern surgery, 719
Davis, Charles H. Stanley, the self-cure of consumption without medicine, 479
Davison, Alvin, mammalian anatomy, 480
Delamere, G., P. Poirier and B. Cunéo, the lymphatics, 719
Dhingra, M. L., elementary bacteriology, 576
Douglas, Richard, surgical diseases of the abdomen, with special reference to diagnosis, 96
Dorland, W. A. Newman, the American pocket medical dictionary, 191, 863
Dreyfus, W. E., the hospital formulary of the Department of Public Charities and the Department of Bellevue and Allied Hospitals of the City of New York, 479
Dwight, Edwin Welles, medical jurisprudence, 816
Edgar, J. Clifton, the practice of obstetrics, 960
Egbert, Seneca, a manual of hygiene and sanitation, 240
Eisendrath, Daniel N., a text-book of clinical anatomy, 96
Fischer, Louis, infant feeding in its relation to health and disease, 912
Fox, L. Webster, diseases of the eye, 528
French, James Magoffin, a text-book of medicine designed for the use of students, 192
Galbraith, Anna M., the four epochs of woman's life, 528
Gies, William J., biochemical researches, 863
Gould, George M., the American year-book of medicine and surgery, 864, 1008
Gould, George M., biographic clinics, 624
Gould, Pearce, elements of surgical diagnosis, 863
Gordy, J. P., new psychology, 1152
Gowers, William R., suggestive sensations of sight and sound, abiotrophy and other lectures, 863
Haab, O., atlas of the external diseases of the eye, 528
Haggard, W. D., transactions of the Southern Surgical and Gynecological Association, 240
Hansell, Howard F., and William M. Sweet, text-book of diseases of the eye for students and practitioners of medicine, 431
Hare, H. A., and H. R. Landis, progressive medicine, 192
Henderson, Frank L., lessons on the eye for the use of undergraduate students, 1152
Hillier, Alfred, the prevention of consumption, 479
Hirst, Barton Cooke, a text-book of diseases of women, 96
Hirst, Barton Cooke, a text-book of obsterics, 240
Hoepli, Ulrico, diseases of warm countries, their prophylaxis and hygiene, 1055
Reviews—
Holmes, Horace P., and M. C. Dr. P. Jousset, the pathogenic microbes, 479
Juler, Henry E., a handbook of ophthalmic science, 1056
Kelly, A. O. J., international clinics, 479
Keen, W. W., and J. W. Wight, American text-book of surgery, 431
Kilmer, T. W., the practical care of the baby, 719
King, William Harvey, medical union number six, 960
Mancini, P., and Manuele Hoepli, rachitis and the deformities produced by it, 1055
Medical Record visiting list or physicians' diary, the, 144
McGlannan, A., organic and physiologic chemistry, 672
McGlannan, Alexius, physics and inorganic chemistry, 239
Monro, Thomas Kirkpatrick, manual of medicine, 479
Montgomery, E. E., practical gynecology, 528
Morrow, Prince A., social diseases and marriage—social prophylaxis, 144
Mumford, James Gregory, a narrative of medicine in America, 336
Mundell, D. E., anatomy applied to medicine and surgery, 576
Nineteenth annual report of the Bureau of Animal Industry, 480
Pearce, S. Savary, a practical treatise on nervous diseases, 864
Peterson, Frederick, and Walter S. Haines, a text-book of legal medicine and toxicology, 816
Physicians' diary, or Medical Record visiting list, 144
Profeit, A. C., army inefficiency, its greatest cause, 1008
Proust, A., and Gilbert Ballet, the treatment of neurasthenia, 480
Richards, George L., nose and throat work for the general practitioner, 239
Rideal, Samuel, disinfection and the preservation of food, 624
Robinson, D. H., and Hannah Oliver, Latin grammar of pharmacy and medicine, 336
Roger, G. H., infectious diseases, their etiology, diagnosis and treatment, 527
Scudder, C. H., the treatment of fractures, 960
Smith, Wm. Johnson, nurses' guide to surgical bandaging and dressings, 48
Spaltcholz, Werner, and W. His, hand atlas of human anatomy, 575
Stevens, A. A., a manual of the practice of medicine, 624
Stout, G. F., a manual of psychology, 1056
Swithinbank, Harold, and George Newman, bacteriology of milk, 672
Thayer, Alfred Edward, compend of pathology, general and special, 480
Treat, E. B., & Co., the international medical annual, 912
Treves, Frederick, a manual of operative surgery, 720
Tyson, James, the practice of medicine, 191
Von Bergmann, E., P. von Bruns, and J. von Mikulicz, a system of practical surgery, 1055
Von Noorden, Carl, anto-intoxication, 863
Wathen, John R., Wathen's epitome of histology, 432
Wells, William H., a compend of gynecology, 864
Western Surgical and Gynecological Association, transactions of, 336
Whitman, Royal, a treatise on orthopedic surgery, 528
Williams, Herbert U., a manual of bacteriology, 576
Ziegler, Ernst, and Alfred Scott Warthin, general pathology, 672

Rheostat, a simple and inexpensive, to use with the electric light current, 440
Rheumatism and gout, 324
articular, antistreptococcus serum in, 210
causes and treatment of chronic, 844
some external diseases of the eye due to, 287, 777
Rheumatoid diseases, so-called, 526
Rhinology unsuccessful, 661

Rhinoplasty, the utilization of the lower lip in, 439
Richardson, Hubert, reurasthenia, 547
Rickets, enlargement of the phalanges in, 297
Ricketts, Edwin, chloroform in labor, 402
Ridlon, Dr., operation by, 509
Rigor mortis, antenatal, 452
Ringworm, prevention of the spread of, 147
Robertson, Victor A., laboratory aids to diagnosis for the general practitioner, 259
Rochester, De Lancey, treatment of pneumonia, 300
Roentgen rays, effect of, on animals, 122
rays in diagnosis, 425
rays in the treatment of cancerous and skin affections, 425
rays in the treatment of epilepsy, 425
rays, the diagnostic value of, 62
Rogers, John, Jr., gastro-enterostomy without a "loop," 641
Rome State Custodial Asylum, examination for superintendent, 992
Roosa, Dr. D. B. St. John, in honor of, 461
Royal Victoria Hospital, Montreal, 229
Rubber cushions, 699
gloves, substitute for, 651
suit, pneumatic, 48
Rupture of mesentric glands during typhoid, 1146
of the sclerotic in a staphylomatous eye, 219
of the spleen, 780
of the uterus during labor, 451
of urethra and bladder, 527
Rush, Dr., statue unveiled, 1184
monument dedication, 1092

Salads, danger in, 944
Salicylic acid harmful, 79
Saliva, a history of, 582
Salivary duct, lesions after obstruction of, 797
Salt on gastric secretion, influence of, 455
Sanatorium by-law carried, 135
new, for consumptives, 228
"Sandhog" and the contractor, the, 232
Sanitary and Moral Prophylaxis, a society of, 1073
aspect of food preservatives, the, 304
barber-shops for Ontario, 417
street-car service in New York, 676
training school in Manila, 936
Saponins, the toxicity of the, 759
Sarcoma, 43, 145
of the hip-joint, 662
treated by toxins, 858
tuberculous infection simulating, 86
X-ray treatment of, 246
Satterthwaite, Thomas E., some considerations on infection and immunity, 1057
Savini, Carlo, the modification of Mattoli in the operation of von Hacker for gastro-enterostomy, 919
Scarlet fever, protozoa of, 954
Scars, pathology of, 797
Schell, J. Thompson, diagnosis of gall-bladder diseases, 59
Schleich, Dr., Prize for, 135
Scholarships, new, for College of Physicians and Surgeons, 563
School children, inspection of, 612
for nurses, new training, 134
inspection, 176
inspection and hygiene, 234
Sclerosis, primary, of the posterior columns, 333
traumatic, 1232
Science, medical, the economic value of, 385
Scientists in St. Louis, meeting of, 38
Scleroderma, 431
Sclerotomy, posterior, 1006
Scurvy in infants, 1080
ocular complications of, 219
Sea-bathing in some forms of skin diseases, 593
Seaside hospital for tuberculous children, 413
Sea urchin, action of alcohol and metals upon the, 350
Sedwick, W. A., a new instrument, 1175
Segregation of urine, 670
Sella turcica, glioma of the, 807
Seminal vesicles, operative surgery applied to the, 622
Senile hypertrophy of the prostate, the radical cure of, 862
Senn, Dr., going to the war, 320
Sensible comment, 708
Separation of a normally-situated placenta, 310
Septa, a factor in the etiology of distorted nasal, 486
Septic infections, the eosinophilic leucocyte in, 505
Sera, blood, the effect of certain (leucocytotoxic), on the ameboid motion of leucocytes, 765
dried immune, 455
Serodiagnosis for identifying blood, 652
Serositis, case of multiple, 374
Serous fluid of unusually high molecular concentration, observations on a, 571
Serum, animal, adrenalin gland infusion, effect upon, 808
antipneumococcus, 1141
antistreptococcus, action of, 810
antistreptococcus, in phthisis, 122
antistreptococcic, in smallpox, 1176
dog, influence of, on experimental tuberculosis, 750
for rattlesnake bites, 952
of nephrectomized rabbits, 1103
(pneumonia) intravenously, 1142
treatment of arteriosclerosis, 170
treatment of hay fever, 798
treatment of tuberculosis, 896
Sewerage, new, for Baltimore, 367
Sewer system, new, to prevent typhoid, 509
Sexual selection in moths, 571
Sheldon, John G., reflections on the surgery of prostatic hypertrophy, 791
Sheppard and Enoch Pratt Hospital, the, Baltimore, 903
Sherrill, J. G., cancer of the intestine, 975
Sherrington, Dr., address by, 900
Sherrington, Prof. Charles S., lecture on cerebral localization, 1040
Shiga bacillus infection of the intestines in infants, 433
Shock and collapse, the use of alcohol, nitroglycerin and amyl nitrate in, 887
an experimental study of the cause of, 572
surgical, treatment of, with adrenalin, 123
temperature in, 162
Shortsightedness in school children, 219
Side-chain theory, history of, 760, 761
Sigmoid flexure, acute and chronic inflammations of the, 449
Significance of pus and blood in the urine, the, 541
Silk, sterilization of, by diffusion currents, 163
Silver foil, the use of, to prevent adhesions in brain surgery, 422
Simplified cystoscope, 425
Sinus thrombosis, 105
Sites for health camps, 415
Skin affections, Roentgen rays in the treatment of, 425
and kidneys, the relations between the activity of, 650
diseases by light rays, treatment of, 217
diseases, sea-bathing in some forms of, 593
eruption, 284
hemangiosarcoma of the, 808
in typhoid, infection of the, 981
symptoms and eruptions, hysterical, 894
the absorptive capacities of the, 987
Skinner, Clarence Edward, two cases of severe X-ray necrosis, presenting some unusual features, 351
Slide box, a new, 1210
Sloane Maternity Hospital appointments, 1217
Smallpox, 1134
antitreptococcic serum in, 1176
chickenpox concurrent with, 20
in Cape Breton, 134
increasing, 228
physicians asked to aid in stamping out, 37
pure carbolic acid in the treatment of, 360
red light treatment for, 1180
some points in diagnosis of, 29
statistics, 365
still active in New York State, 176
Smith, Dr. Andrew H., address by the retiring president, 475
Smoke ordinance adopted, 611
Smokers' ulcer of the hard palate, 335
Snake bite, antidote for, 948
venom, practical method of destroying, 1032
Snapping knee, 430
Sneak thief, another, 1080
Soap for disinfection, a new, 504
Sobel, Jacob, enlargement of the phalanges in rickets; a report of two cases, 297
Social evil in university life, 97
Society and criminals, 566
for Experimental Biology and Medicine, the, 238, 571, 1101
for Prevention of the Spread of Tuberculosis, 365
of sanitary and moral prophylaxis, 1087
of Sanitary and Moral Prophylaxis, a plea for the organization of a, 1073
of the Alumni of City Hospital, 286, 334, 619, 958, 1103
Somers, Lewis, S., the recognition and treatment of some of the pharyngeal lesions of syphilis, 496
Soper, George A., the management of typhoid fever epidemics, 1
George A., the outlook for a more sanitary street-car service in New York, 676
Sound, pitch of respiratory, 1187
South African war, the mental and moral effects of the, 368
Southern Surgical and Gynecological Association, the, 39
Spasm of the esophagus, treatment of, 859
Spastic ileus, a case of, 121
Specimens, pathological, 183
Spencer, Herbert, as a hypochondriac, 513
Spinal cord, degeneration of the, 716
cord, tuberculosis of the, 673
ischemia, 953
Spine, dislocation of the, 41
Spitting nuisance again, the, 132
Spleen, chronic cyanotic polycythemia, with enlarged, 499
elastic tissue in the, 455
human, reaction of the, 988
in pernicious anemia, 1202
observations on the functions of the, 407
rupture of the, 780
Spleens, movable, 999
Splenic diseases, surgical treatment of, 171
Splenomedullary leucemia, 1176
Splenomegaly, 938
anemia or, types of splenic, 998
Splint for treatment of fracture, 396
Spondylitis, the present status of the mechanical treatment of, 1050
tuberculous, straightening of the curvatures of, 1050
tuberculous, surgical treatment of, 1051
Spontaneous cure of carcinoma, 358
Spotted fever, diagnosis of, 1036
fever, spread of fatal, 1036
Spratling, Dr. William P., 993
Spread of typhoid fever by contact, the, 569
Sputum, eosinophile cells in, 450
Squadron A, medical examination in, 36
St. Elizabeth's hospital report, 462
St. Francis Hospital, new, 507
St. Louis World's Fair, pathological exhibit at the, 664
St. Luke's Hospital, 131, 803
St. Mark's Hospital, report of, 850
Stabler, Aug., iodine and mercury to combat local infections, 1201
Stage, vital statistics on the, 758
Stain applicable to differential leucocyte counts, 717
new, for diphtheria bacilli, 498
Stamm, M., the value of vaginal Cæsarean section, with report of two cases, 354
Standard, medical, too low, 317
Stanley's observations on malaria, 949
Staphylococcus aureus infection, 282
sepsis, case of, 604
Staphylococci, agglutination phenomena of the, 652
in systemic infections, 807
Starch digestion in infancy, 211
Starvation for malignant growths, 1144
State charity exhibit, 851
civil service examinations, 808
Medical Society, annual meeting of the, 223
Tuberculosis Commission organizes, 462
water and sewer commission, proposed, 563
Statistics, coroner's, 78
recent, of physicians, 273
suggestive vital, 712
of tubal pregnancy, 503
Steam inhalations at the Babies' Hospital, 379
valuable adjuvant, 525
Stearns' laboratories, Detroit doctors at, 805
Steatogenesis of the organs produced experimentally, 940
Stellwag's symptoms on the stage, 616
Stenosis, mitral and tricuspid, 1185
pyloric, treatment of, with thiosinamine, 651
tuberculous, of the intestine, 606

Sterility, operative cure of, 32
Stern, Louis, the internal treatment of diseases of the bladder, 309
Stewart, Douglas H., thoughts on chlorine and an antiseptic technic, 17
Still's disease, 1225
Stockton, Charles, G., the classification and symptomatology of diseases of the pancreas, 968
Stomach, a new method for transillumination of the, 835
comparative methods of locating the position of the, 956
carcinoma of, 68, 996
dilatation of the, 955
hour-glass, 406
the relations of the, to autoinfection, 956
the relation of the X-ray and radioactive solutions to examination of the, 958
transillumination of the, 956
ulcer and cancer of the, from a surgical standpoint, 721
whistle, the, 956
Stomatitis, recurring membranous, 284
Stone, supposed ureteral, 334
Stones, intrahepatic, 1221
Street-car service in New York, the outlook for a more sanitary, 676
Streets to be flushed, 994
Strength of digitalis leaves, determining the, 558
Streptococcic myelitis, 953
Streptococcus infection, puerperal, 168
Stricture, cicatricial esophageal, treatment of, 858
spasmodic, of the esophagus, 954
Strychnine in fever, 951
not a cardiac stimulant, 951
Stubbert, J. Edward, a historical sketch of some of the so-called cures for consumption, with a few notes on later-day treatment, 688, 734
Studies on dysentery and typhoid, 701
Study, Joseph N., neurasthenia, 159
of hibernation, a chemical, 124
Stuttering, a few remarks upon, 654
Subclavian artery in man, observations on the, 815
Subcutaneous feeding, 750
Subliminal consciousness, observations on, 953
Subluxation, habitual, of the patella, operative treatment of, 748
Subscribers, enthusiastic, 1137
Substitute for rubber gloves, 651
Substitution legalized, is? 1040
Sugar in the organism, the destruction of, 581
in urine, volumetric estimation of, 498
metabolism, 237
Suicide, 805
by carbolic acid, 415
Sulphanilate of soda in the cure of Basedow's disease, 312
Sulphocyanide excreted in health and disease, amount of, 891
Sulphocyanides on metabolism, effects of, 891
Summer health corns, 1036
Sun as a cause of disease, the, 449
Superintendent of new State Hospital, examination for, 364
Suppuration, labyrinthine, 503
Suprapubic drainage, 669
Suprarenal capsules, survival of an animal after removal of both, 238
extract, on the influence of, 1103
glands, influence of extract of, 949
glands, new studies in the, 124
producing lesions of atheroma, 702
Suprarenin in surgery, 603
Supravaginal amputation, 702
Surgeon, personal characteristics of the, 1143
ship's, many trips for, 709
Surgeon's point of view, the, 957
volunteer, for Japan, 413
Surgery, conservative, in crushing injuries of the arm, 180
experimental, at Bellevue, 1217
experimental, on the vasa deferentia, 889
gallbladder, 500
gastric, the possibilities of, 221
gradual development and rise of, 1143
growing importance of, 1143
observations on gynecological, in the German clinics, 88
of prostatic hypertrophy, reflections on the, 701
of the gall-bladder and ducts, 587
of the prostate, 846
suprarenin in, 603
ureteral, the progress of, 44
Surgical cases in Albany, 281
intervention, 999
intervention, immediate, 912
intervention in typhoid perforation, 267
lesions in the upper addomen, the association of, 1111
outfit for fire companies, 12
standpoint, normal labor considered from a, 603
treatment of abortion, the, 1007
treatment of Bright's disease, the, 426
treatment of epilepsy, 803
treatment of gall-stones, 558
Suspension of tuberculous policemen, 77
Suture of the heart, 509
Sweat glands, adenoma of, 798
Symposium on nephritis, 285
Symptom-complex, abdominal, in diseases of the lower part of the dorsal cord, 653
Symptoms not to be treated, 1141
of perforation, 1139
undigested, 284
Syndrome of cerebral tumors, variations of the, 214
Syphilis, 102
and arteriosclerosis, 1142
and cancer of the vulva, 45
and tabes, 454
as a cause of the neuroses, 805
copper in, 72
diagnosis and treatment of, 494
inoculation of anthropoid apes with, 217
in our colonies, 265
pharyngeal lesions of, 496
preventive treatment of, 217
pulmonary, 314
the ocular signs of, 493
to tabes, the relation of, 502
Syphilitic joint disease, 430
Systemic infections, staphylococci in, 807

Tabes and syphilis, 454
and trauma, relation between, 580
forensic eye aspects of, 555
syphilis, the relation of, 502
Tachycardia in pulmonary tuberculosis, 450
Tænia nana in Texas, 251
Taylor, Dr. R. W., 850
J. Madison, the scope of physical economics; an inquiry into the possibilities of enhancing human efficiency through physical education, 838
Teachers College, special medical courses at, 563
Temperament and tinnitus aurium, 517
Temperature of the monkey, diurnal wave in the, 124
remarks on, 892
variation in nocturnal animals, 123
Tendon reflexes in uremia, 490
Tension, physiological action and solution, 501
Teratoma of the broad ligament, 1045
Testicle, tuberculosis of the, 923
undescended, 663
Testis, retained, case of carcinoma of, 510, 917
Test, new, for pharmacists, 37
Tests, physical, for teachers, 1217
Tetanus, blank cartridges and, 807
Tetany, case of, 350
gastric dilatation and, 943
in colitis and phthisis, 1213
Theaters, city, to be inspected, 78
Theatrical profession as a factor in the dissemination of disease, the, 551
Theocin as diuretic, 504
Theories, modern, of eclampsia, 312
Therapeutic administration, 949
Therapeutics, a new outlook in, 807
of arsenic, 574
ophthalmic, subconjunctival injections in, 218
radium in ocular, 312
Thiosinamine, treatment of pyloric stenosis with, 651
Thompson, Sir Henry, death of, 903
W. Gilman, the economic value of medical science, 385
Thoracic difficulties of childhood exclusive of cardiac, 612
Thorndike, Paul, when and how shall we operate for obstructing hypertrophy of the prostate gland, 789
Thread reaction, some observations on the; its occurrence in the human body, 910
through nostril, 859
Throat work, eye and, two appliances to facilitate, 1013
Thrombosis, coagulation of the blood and, 715
of renal vein, 210
of superior mesenteric artery, 1084
septic, of the femoral vein, 47
venous, in typhoid fever, 950
Thrush, 396
Thymus, physiology of the, contribution to the, 987
Thyroidism, acute, following curettage, 1209
Tic, convulsive, 1231
douloureux cured, 234
division of the sensory root for, 1191
Tinnitus aurium, 517
Tissue, pathological changes in, under the influences of the X-ray, 685
Titration of gastric juice, 211
Tobacco-alcohol amblyopia, possible etiological factor in, 218
smoking, 220
"Tonnage" in the medical profession, 853
Tonsil, etiology of the hyperplasia of the pharyngeal, 218
the submerged, 278
Tonsillitis, therapeutics of, some notes on the, 663
Toronto University, convocation at, 1183
Torticollis, congenital deformity of the neck resembling, 429
Tourniquets, pneumatic; with especial reference to their use in craniotomies, 577
Tousey, Sinclair, a case of carcinoma of retained testis, 917
Toxemia, tuberculosis, 235
Toxicity of poisons, modification of the, 220
of the saponins, the, 759
Toxin and pressure, 1222
Toxins and antitoxins of fatigue, 454
Toxoids, 760
Toxophore group, 761
Trachoma treatment without operation, 282
Training and heredity, physical, 995
school, Bellevue, site for, 507
school, rents old, 994
Transillumination of the stomach, 956
of the stomach, new method for, 835
Transmission of tuberculosis from man to cattle, 556
Transudates and exudates, 804
Trauma and tabes, etiological relation between, 580
in movable kidney, 408
Treatment of epilepsy, 220
of gastric ulcer, 408
internal, of diseases of the bladder, 309
Trichina spiralis, 572
Trichinosis, observations on, 1176
Trichinous infection, eosinophiles during experimental, 671
Tricuspid regurgitation, 533
Tri-State Medical Society of Iowa, Illinois and Missouri, 852
Trochanter, lesser, fracture and separation of the, 164
Tropeolin OO, 597
Tropical medicine, course of, 709
ulcer, 79
Trudeau, Dr., lecture by, 226
Trypanosoma Lewisi, 909
Trypanosomes, cultivation of, 999
different forms of, 1000
Philippine, survival of, 1000
Trypanosomiasis, 810
multiplex, 954
Tryptic digestion, the effect of protoplasmic poisons on, 401
Tubal pregnancy, statistics of, 503
Tubercle bacilli in milk, 918
Tuberculin, value of, 1194
Tuberculoma of the liver, hepatectomy for, 727
Tuberculosis and diabetes insipidus, 952
and pneumonia in Chicago and New York, 1089
and pregnancy, 310
and the family physician, 1224
and the health board, 1180
a royal commission for the prevention of, 417
Association, list of directors of, 1134
Association, National, officers of, 1135
at the Zoo, 900
avian, 763
bovine, 158
bovine, the influence of, on human health, 876
Civic Club to fight against, 509
clinic, 902
congress, 95, 1132
congress, the Maryland, 274
convalescents from, 1227
crusade against, 269
experimental, influence of dog serum on, 750
exposition at Baltimore, 229

Tuberculosis, genito-urinary, 500
genito-urinary, the value of climate in, 65
glandular, 207
glycogen reaction of leucocytes in, 917
home treatment of the, 645
house infection of, 345
immunizing against, 212, 656
in British Columbia, to fight, 272
infantile, malnutrition and, 1152
in Montreal, the prevention of, 135, 1183
miliary, following appendectomy, 1104
national association on, constitution and by-laws of the, 1135
new society against, 661
of the bladder and prostate, 1054
of the larynx and prostate, the treatment of, by the X-ray, 1053
of the nervous system, 1182
of the spinal cord, 673
of the testicle, 923
of the urinary bladder, 924
pavilions to be opened, 900
primary intestinal, 164
primary, of the tonsil, 264
problem, a study of the, in New York city, 1014
pulmonary, anatomy and histology of, 23
pulmonary, as an infectious disease, 682
pulmonary, the blood in, 797
pulmonary, treatment of, with raw meat, 68
pulmonary, varieties of, 744
renal, case of nephrectomy for, 85
renal, some features of, 783
serum, Marmorek's experiments with, 272
serum treatment of, 896
society for prevention of the spread of, 365
specific therapy of, 625
surgery of urinary, in women, 43
tachycardia in pulmonary, 450
temperature range in, 71
the administrative control of, 337, 365
the prevention of, 804
the specific treatment for, 1200
to extend crusade against, 317
to wage war on, 756
toxemia, 235
transmission of, from man to cattle, 556
value of district nursing in, 175
Tuberculous antitoxins, 403
cars for the, 463
children, seaside hospital for, 413
disease of bone, treatment of cold abscesses and sinuses in, 1191
mass from liver, excision of, 404
Tulane Medical School, gift to, 902
University, 1219
Tumor, cerebral, 1002
coloration, 998
intradural spinal, laminectomy for an, 527
of the parotid gland, 671
of the pontomedullocerebellar space, 812
Tumors, cerebral, variations of the syndrome of, 214
differential diagnosis of extra- and intraspinal, 1214
epithelial, of the skin and mucous membrane, 808
melanin and glycogen in melanotic, 165
multiple cerebellar, case of, 811
of salivary glands, 718
of the breast after menopause, 1144
of the carotid body, 803
of the nasopharynx, operative treatment of, 490
Twentieth century professors, 75
Typhoid and dysentery, studies on, 701
and economics, 172
and flies, 320
and pneumonia, increase of, 415
at Poughkeepsie, 565
at Watertown, N. Y., 412
bacillus infection of oysters, 325
cases, the bactericidal reaction in the blood serum of, 937
cost of the Philippines, the, 35
damage, suits for, 948
epidemiology, 370, 467
fever, 33, 222, 565
fever and contact, 667
fever, anomalies and difficulties of diagnosis in, 5
fever, copious water in, 950
fever, diazo and Widal reactions in, 1082
Typhoid fever, efforts to prevent and suppress, 367
fever epidemic in the suburbs of Montreal, 135
fever epidemics, the management of, 1
fever in Montreal and suburbs, 229
fever, management and treatment of, 11
fever, ninety million dollars for, 504
fever, perforation in, 1139
fever, polyuria in, 949
fever, prognosis in, 981
fever, the bacteriology of the blood in, 1046
fever, treatment of, personal experience in the, 959
fever, value of leucocyte counts during the course of, 982
germs, isolation of, 1132
improved technic of agglutination test in, 940
in Germany, 457
in Paris, 822
marked increase in, 709
new sewer system to prevent, 509
perforation in, 890
perforation, surgical intervention in, 267
perforation, treatment of, 405
preeminence, 320
prevalence of, 234
record broken, 756
serum, a simple method of isolating from water, forms which agglutinate with, 765
spine, 429
the appendix and, 1084
treatment of, with serum, 504
uterine hemorrhage in, 1140
Typhus among Germans, 926

Ubiquity of colon bacillus, 670
Ulcer, after-history of gastric, 844
and cancer of the stomach from a surgical standpoint, 721
duodenal, relationship of, to acute eczema, 70
etiology, symptomatology and diagnosis of gastric, 380
gastric, diagnosis of perforated, 164
gastric, excision of the ulcer-bearing area in, 1145
obscure rectal, 335
smokers', 335
treatment of gastric, 380, 408
tropical, 79
Ulcerative lesions, 1222
Ulnar nerve, dislocation of the, 31
nerve, paralysis of the, 1156
Ultramicroscopic examination of fluids, 126
Ultramicroscopy, 801
Unification and uniform organization, a plea for, 137
plans, ratification of, 460
Union, intestinal, new method of, 31
Unique departure, a, 229
Unity of action sought, 804
University and Bellevue Medical College, addition to the, 1133
and Bellevue Medical College, changes in, 1133
life, social evil in, 97
of Chicago, notes on, 176
of Illinois commencement exercises, 1000
of Illinois, presidency of, 804
of Pennsylvania, 1217
of Pennsylvania, faculty reorganization, 1038
of Pennsylvania laboratories, dedication of, 1180
University's new laboratories, 1038
Unlawful practice of medicine, 103
Unlicensed physicians, to prosecute, 851
Unstriated muscle, the physiology of, 501
Urachus, dilated, 235
Uremia, lumbar puncture in, 750
and eclampsia, 1223
tendon reflexes in, 400
Uremic symptoms due to bladder conditions, 668
Ureter catheterization, synchronous, 423
Ureterolithotomy, 1099
Urethra, female, surgery of the, 1100
prostatic, removal of the, for senile enlargement, 405
Uric acid in gout, 322
acid and disturbed metabolism, 1227
acid, relation of, to gout, 815
Urinary chlorides, 1141
diagnosis, limitations of, 182
insufficiency, 323
meatus, hypertrophies and inflammations about the, 1100
frequency of, 524
Urine and segregated urines, examination of the, as a means of diagnosis in surgical diseases of the kidney, 366
chemistry of the, 1137
cryoscopy of, 149
ferments in the, 1130
human, hemolysis in, 716
incontinence of, in women, 109
in lead poisoning, 844
nitrogen in, 988
segregation of, 670
sugar in, volumetric estimation of, 498
the significance of pus and blood in the, 541
vesical retention of, 1166
Urticaria medicamentosa, 32
Use of opium increasing, 803
Uses of lumbar puncture, the, 453
Uterine hemorrhage in typhoid, 1140
prolapse, Muller's operation for, 167
Uterus, accidental perforations of the, 380
a new route to the, 1040
bilocular, and bifid vagina, 1194
cancer of the, 41
gravid, ischuria in retroflexion of the, 702
gravid, retroversion in the, 169
recurrent fibroids of the, 983
the correction of retrodisplacements of the, 382

Vaccination against tuberculosis, 625
and life insurance, 234
at Philadelphia Hospital, 317
law needed, 709
Maragliano's, 659
of the frog's skin and cornea, bodies produced by, 908
once more, 315
to enforce, 661
Vaccine and vaccination, 383
bodies, comparative morphology of, 809, 907
bodies in monkey's skin, 909
corps paid, 415
vesicles, smears from, 909
Vagina, a rare case of a foreign body in the, 985
Vaginal method, the technic of the, 44
wall, repair of the anterior, after labor, 1150
Vale, Frank P., a brief note on the X-ray treatment of glandular tuberculosis, 207
Valentine, Ferd C., and Terry M. Townsend, vesical retention of urine, 1166
Ferd C., regarding the ownership of the name Valentine, 277
Value of climate in genito-urinary tuberculosis, the, 65
Van Cott, Joshua M., renal decapsulation from the pathologist's point of view, 970
Van Hook, Weller, apparatus for nitrous oxide-ether anesthesia, 1159
Weller, the ammonium sulphate method of sterilizing catgut, 934
Varices, lymphatic, of the small intestine, 940
Varieties of pulmonary tuberculosis, 744
Variola, 706
Vas deferens, anastomosis for the, 407
Venesection in pneumonia, 1141
Ventilation of the House of Commons, the, 665
Veratrum viride in surgery, 846
Vertex, occipitoposterior positions of the, 1077
Vesical retention of urine, 1166
Viscera, hollow, gangrene of the, 1083
Visceral changes, 384
Vital statistics modernized, 415
statistics on the stage, 758
Vivisection: two views, 806
Vocal cords in double recurrent paralysis, 350
fremitus, 1000
Volunteer surgeons for Japan, 413
Volvulus in pregnancy, 168
Vomiting, pernicious, 168
Voorhees, James D., the management of occipitoposterior positions of the vertex, 1077

Wachenheim, F. L., the hemorrhagic diseases and their allies in the light of modern pathology, 114
Wainwright, Jonathan M., and Henry J. Nichols, hookworm disease and miners' anemia in the anthracite coal fields, 785

Walker, W. K., a few considerations concerning the mechanism of developing mental disorder, 926
Walsh, James J., pulmonary tuberculosis as an infectious disease; its early diagnosis, 682
War, anti-mosquito, 1136
on baby farms, 709
Ward, Nathan G., otitis media in croupous pneumonia, with the report of a case of acute suppurative otitis media preceding the pneumonia, 726
Warts and moles, danger in, 1143
Water and food on gastric secretion, effect of, 213
and unbreathed air, 525
anesthesia in operations about the rectum, anus and buttocks, 183
anesthesia in surgery, 1174
chemical disinfection of, 1090
impure, for cities, 511
in fevers, retention of, 950
supply, sterilization of city, 803
Watertown epidemic abating, 563
Wells, Brooks H., acute thyroidism following curettage, 1209
West End Medical Society, 412
Western General Hospital, Montreal, 229
Western Surgical and Gynecological Association, the, 379, 421
Whalen, Dr. Charles, appointment of, 37
What not to do, 526
White Haven leads in consumption cures, 133
White, William A., the early diagnosis of general paresis, 679
Whooping-cough, 1151
Widal reaction, 204
test, improvement in, 1130
test, the, 1137
Wiesner, D. H., asthenopia: a clinical study, 921
Wiggin, Dr., honors to, 366
Frederick Holme, abdominal pain of intestinal origin, 289
Williams, Ennion G., the regulation of the duration of exposure and the distance from the tube in X-ray therapy, 592
Francis H., some of the physical properties and medical uses of radium salts; with report of 42 cases treated by pure radium bromide, 241
Wills Hospital, 901
Hospital clinics, 1133
Hospital Ophthalmic Society, 1005
Willson, Robert N., the social evil in university life: a talk with the students of the University of Pennsylvania, 97
Winnipeg Medical Association, 319
Winter weather and public health, 510
Witch doctors to be eradicated, 1038
Witthaus, R. A., a laboratory guide in urinalysis and toxicology, 240
Woman M.D., first, 417
Woman's hospital, appeal for a, 899
hospital corner-stone laid, 1035
medical college, 1038
medical college, commencement at, 992
place in medicine, 175
Wood alcohol found in whisky, 462
Woodhead, Dr., entertainment of, 37
G. Sims, morbid anatomy and histology of pulmonary tuberculosis in relation to its general pathology and clinical manifestations, 23
Wound, gun-shot, laparotomy for, 474
infection from speaking at operations, 1030
Wounds of arteries, 718
penetrating, of the abdomen, 180, 748
Xanthoma, 809
infantum, 180
lesions of the nodular form of, 718
X-ray anniversary, 613
failures much more numerous than successes in the treatment of pulmonary tuberculosis, 1054
in circumscribed periurethral gonorrhea, 72
necrosis, two cases of severe, 351
pathological changes in tissue under the influences of the, 685
prize essays, 268
therapy, the distance from the tube in, 592
therapy, the regulation of the duration of exposure in, 592
treatment of glandular tuberculosis, 207
treatment of sarcoma, 246
treatment, unfortunate results from, 1054
X-rays, Keloid treated by, 179
Yale Medical School, gift to, 758
Yeast, a glycolytic substance isolated from, 212
Yellow atrophy, acute, 1000
fever, 1183
fever and the Mexican frontier, 948
fever, etiology of, 211
fever in Mexico, 1124
jack, to rid Mexico of, 511
Zonal necrosis of the liver, 1000
Zona, multiple, 31
Zoster, perineal, 181

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